6-2008

Self-Solicited Feedback: Effects of Hourly Pay and Individual Monetary Incentive Pay

Julie M. Slowiak
Western Michigan University

Follow this and additional works at: <https://scholarworks.wmich.edu/dissertations>

Part of the Experimental Analysis of Behavior Commons, Industrial and Organizational Psychology Commons, and the Social Psychology Commons

Recommended Citation

Slowiak, Julie M., "Self-Solicited Feedback: Effects of Hourly Pay and Individual Monetary Incentive Pay" (2008). *Dissertations*. 816.

<https://scholarworks.wmich.edu/dissertations/816>

This Dissertation-Open Access is brought to you for free and open access by the Graduate College at ScholarWorks at WMU. It has been accepted for inclusion in Dissertations by an authorized administrator of ScholarWorks at WMU. For more information, please contact wmu-scholarworks@wmich.edu.

SELF-SOLICITED FEEDBACK: EFFECTS OF HOURLY PAY AND
INDIVIDUAL MONETARY INCENTIVE PAY

by

Julie M. Slowiak

A Dissertation
Submitted to the
Faculty of The Graduate College
in partial fulfillment of the
requirements for the
Degree of Doctor of Philosophy
Department of Psychology
Dr. Alyce M. Dickinson, Advisor

Western Michigan University
Kalamazoo, Michigan
June 2008

UMI Number: 3316934

INFORMATION TO USERS

The quality of this reproduction is dependent upon the quality of the copy submitted. Broken or indistinct print, colored or poor quality illustrations and photographs, print bleed-through, substandard margins, and improper alignment can adversely affect reproduction.

In the unlikely event that the author did not send a complete manuscript and there are missing pages, these will be noted. Also, if unauthorized copyright material had to be removed, a note will indicate the deletion.

UMI Microform 3316934

Copyright 2008 by ProQuest LLC.

All rights reserved. This microform edition is protected against unauthorized copying under Title 17, United States Code.

ProQuest LLC
789 E. Eisenhower Parkway
PO Box 1346
Ann Arbor, MI 48106-1346

© 2008 Julie M. Slowiak

ACKNOWLEDGMENTS

I would like to recognize and offer my sincere gratitude and thanks to the following individuals who supported me throughout this process: To Alyce Dickinson, my advisor, for her continual guidance and consultation during all stages of this study and for her conscientious and thorough review of this manuscript. I would also like to thank Bradley Huitema for providing his thoughtful input on the proposal for this project and for his advice and guidance regarding the experimental design and analysis. Additionally, I would like to thank Heather McGee and Kevin Munson for their helpful comments on the proposal version of this study. I would also like to thank my research assistants: Amy Loukus, JP Martinez, and Kelly Stone. In addition, I would like to thank Rhiannon Fante for her continual friendship and support. Finally, I would like to thank Alyce Dickinson and the Western Michigan University Graduate College for their help funding this research.

Julie M. Slowiak

TABLE OF CONTENTS

ACKNOWLEDGMENTS	ii
LIST OF TABLES	vi
LIST OF FIGURES	vii
INTRODUCTION	1
Performance Feedback	4
Monetary Incentives	5
Self-Solicited Feedback and Observing Behavior	9
Theoretical and Applied Implications	12
Role of Personality in Work Motivation	14
Purpose of Current Study	17
METHOD	20
Participants	20
Setting	22
Materials, Experimental Task, and Alternative Activities	22
Motivational Trait Questionnaire (MTQ)	22
Experimental task	22
Alternative activities	23
Dependent Variables	24
Independent Variable	25

Table of Contents—continued

Hourly pay	25
Individual monetary incentive pay.....	25
Experimental Design and Statistical Analysis	26
Primary analyses	26
Secondary analyses	27
Experimental Procedures	27
Random assignment.....	27
Payment	27
Introductory session.....	28
Pre-test session	28
Experimental sessions.....	29
Debriefing session	29
Independent Variable Integrity.....	30
RESULTS	31
Primary Analyses	31
Secondary Analyses	35
Self-Report Data.....	37
DISCUSSION	39
REFERENCES	49
APPENDICES	
A. Recruitment Script.....	57
B. Recruitment Flyer	59

Table of Contents—continued

C. Screening Questionnaire	61
D. Pay System Quizzes.....	63
E. Informed Consent Documents	66
F. Western Michigan University HSIRB Approval Letter.....	71
G. MTQ Participant Instructions and Sample Items.....	73
H. Screen Shot of Check Program.....	76
I. Post-Session Data Recording Form	78
J. Instructional Script: Hourly Pay Condition	80
K. Instructional Script: Monetary Incentive Pay Condition	82
L. End of Study: Participant Feedback Forms	84
M. Post-Study Participant Questionnaire	87
N. Debriefing Script	89
O. Pay Chart	91

LIST OF TABLES

1. Analysis of Variance for Feedback Solicitation.....	31
2. Pearson Correlations Between Feedback Solicitation and MTQ Subscales ...	32
3. Analysis of Covariance for Feedback Solicitation (Covariate: Mastery Goals).....	33
4. Analysis of Covariance for Feedback Solicitation (Covariate: Other Referenced Goals).....	34
5. Analysis of Covariance for Feedback Solicitation (Covariate: Competition Seeking).....	34
6. Analysis of Covariance for Number of Correctly Completed Checks	35
7. Means and Standard Deviations for Percentage of Correctly Completed Checks, Rate of Correct Check Completion, and Time On-Task	36
8. Pearson Correlations Between Number of Correctly Completed Checks and Percentage of Correctly Completed Checks, Rate of Correct Check Completion, and Time On-Task.....	37
9. Participant Comments: Self-Solicited Feedback.....	37
10. Participant Comments: Performance Goals	38

LIST OF FIGURES

1. Average frequency of feedback solicitation for each pay group during 5-min intervals.....	32
--	----

INTRODUCTION

The most widely-used intervention in Organizational Behavior Management (OBM) has been and continues to be performance feedback. Reviews of the OBM literature have found that feedback, by itself or in combination with other elements such as goal setting or incentives, has been used in 65% - 70% of interventions (Balcazar, Shupert, Daniels, Mawhinney, & Hopkins, 1989; Bucklin, Alvero, Dickinson, Austin, & Jackson, 2000; Nolan, Jarema, & Austin, 1999). Considered to be one of the least understood of all OBM interventions, performance feedback has been defined in several different ways. For example, feedback has been defined as (a) information given to individuals regarding the quantity or quality of their past performance (Prue & Fairbank, 1981), (b) “information about performance that allows an individual to adjust his or her performance” (Daniels, 2000, p. 101), and (c) information transmitted back to the responder following a particular performance (Sulzer-Azaroff & Mayer, 1991).

Additionally, and perhaps more importantly, research on performance feedback has resulted in conflicting interpretations of the function(s) of feedback, as well as the conditions under which it works (Balcazar, Hopkins, & Suarez, 1985-86; Ilgen, Fisher, & Taylor, 1979; Kluger & DeNisi, 1996; Kopelman, 1986). For example, it has been suggested that feedback functions as (a) a discriminative stimulus, (b) a conditioned reinforcer, and (c) an establishing operation (Balcazar et al., 1985-86; Bucklin, McGee, & Dickinson, 2003; Duncan & Bruwelheide, 1985-86; Peterson, 1982). Despite the differences in conceptual interpretations and mixed results of feedback studies, the positive effects of performance feedback have been well-documented (for reviews, see Alvero, Bucklin, & Austin, 2001; Balcazar et al., 1985-86; Kopelman, 1986).

When used, performance feedback is typically delivered by managers or supervisors (Balcazar et al., 1985-86). Feedback source has been identified as a significant factor in the use of performance feedback (Ilgen et al., 1979); however, research has suggested differential effects of various sources of feedback, including the organization, managers/supervisors, coworkers, the task itself, and the individual (e.g., Greller, 1980; Greller & Herold, 1975). Through the use of technology, Earley (1988) assessed the delivery of computer-generated feedback via a computer-tracking mechanism that automatically monitored performance accomplishments of individual performers. Earley found increases in performance when individuals generated feedback on their performance via the computer-tracking system (i.e., self-generated feedback) versus when feedback was delivered by the individual's supervisor (i.e., supervisor-provided feedback). Additionally, Kluger and Adler (1993) found that participants in their laboratory study were more likely to seek feedback from a computer than from a person.

Similar to this, Electronic Performance Monitoring (EPM) has become another common method for monitoring employee performance as new computer technology is introduced in the workplace (Mallo, Nordstrom, Bartels, & Traxler, 2007). EPM has been defined by the United States Office of Technology Assessment as "the continuous, computerized collection, storage, analysis and reporting of employee production activities" (Mallo et al., p.50). Familiar examples of work activities observed through the use of EPM include monitoring and reviewing telephone conversations and recording time spent, content reviewed, and keystrokes entered on individual computer workstations (Smith, Carayon, Sanders, Lim, & LeGrande, 1992). Schleifer and Shell

(1992) contend that EPM has advantages for employees, including the ability to provide timely feedback on individual performance. The recent introduction of EPM systems in the workplace, coupled with the results of Earley (1988) and Kluger and Adler (1993), lend support for the use of computer-based tracking systems as a source of performance feedback.

Northcraft and Earley (1989) evaluated the impact of different feedback sources on the credibility of feedback, strategy acquisition, and performance in a stock market simulation. Four feedback sources were compared: (a) organization – feedback was delivered impersonally, (b) supervisor – feedback was delivered verbally and in written form by a professor, (c) computer-generated – self-generated by the individual with the use of a computer, and (d) self-generated – without the use of a computer. In their study, performance, along with credibility of feedback and strategy acquisition, was higher under both the computer-generated and self-generated feedback conditions. These results lend further support for the use of technology (i.e., computers) as a feedback source and advocate the involvement of individuals in feedback generation.

Both Earley (1988) and Northcraft and Earley (1989) described their feedback procedure as self-generated or computer-generated, indicating that the “feedback was self-generated by the worker using the computer system” (Earley, p. 50). Unfortunately, they did not describe the feedback generation procedure in detail. In their discussion, Northcraft and Earley suggested that future research should examine feedback received passively from the computer (e.g., allowing a performer to use a computer to simply display or retrieve – rather than generate – feedback). Only one subsequent study that

directly evaluated the effects of passively retrieved feedback was found (Kluger & Adler, 1993); no studies that examined self-generated computer feedback were found either.

For purposes of the present study, the form of feedback to which Northcraft and Earley (1989) alluded will be described as *self-solicited feedback*, whereby an individual is able to obtain immediate feedback on his or her performance at any given time. The present review of the literature failed to uncover any studies that evaluated factors that might influence an individual to *self-solicit* performance feedback. Given the widespread use of performance feedback in OBM interventions, evaluation of self-solicited feedback seems warranted with respect to the conditions under which feedback will be solicited, along with the effects of self-solicited feedback on performance.

Performance Feedback

In their review of ten years of articles in four major journals, Balcazar et al. (1985-86) found that feedback had consistent effects in 41% of the studies evaluated. Feedback was considered to have consistent effects “when it uniformly produced desired mean increases or decreases of performance compared with mean baseline levels and/or levels produced by any other independent variable(s)” (p.67). Consistent effects were found in 52% of the articles when performance feedback was combined with other behavioral consequences such as monetary incentives and praise. A more recent review of feedback by Alvero et al. (2001) found that feedback paired with behavioral consequences had consistent effects in 58% of the articles assessed.

Balcazar et al. (1985-86) identified eleven different sources of feedback (i.e., “the individual or device that presented the information to the performer,” p.68) and found consistent effects of feedback in 50% (N = 27) of articles reviewed when the source of

that feedback was a supervisor or manager. Alvero et al. (2001) found slightly higher consistent effects (59%) when supervisors or managers were the feedback source. Self-generated feedback has been defined as when an individual uses a self-recording procedure to record performance (Alvero et al; Balcazar et al.) and was found to have consistent effects on performance in 21% (Balcazar et al.) and 50% (Alvero et al.) of articles reviewed. Balcazar et al. also found that the combination of supervisor and self-generated feedback had consistent and mixed effects in 31% and 56% of studies reviewed, respectively. Alvero et al. found mixed effects of the combination of supervisor and self-generated feedback in the one article evaluated in their review.

Self-generated feedback appears to be related to self-solicited feedback with regard to the individual's ability to obtain feedback on his or her own performance. Self-generated feedback would appear to be considered an *active* (i.e., higher response effort) method for obtaining feedback, whereas self-solicited feedback might be a more *passive* (i.e., lower response effort) approach to attain feedback because individuals are not self-recording their performance; rather, performance is recorded using a computer-tracking mechanism. With both self-generated and self-solicited forms of feedback, however, the individual has the option to decide whether and when they view the feedback. Although research has evaluated the effects of self-generated forms of feedback on performance, no studies were found that evaluated why or under what conditions individuals engaged in the response of self-generating feedback.

Monetary Incentives

The prevalence of individual incentive and pay-for-performance programs within the business industry continues to rise. According to a series of surveys conducted in the

late 1980s and early 1990s, about 90% of Fortune 100 companies used some type of individual incentive plan (Ledford, Lawler, & Mohrman, 1995). Specifically, Peck (1990) reported that approximately 35% of U.S. companies used individual monetary incentive programs to pay their employees. Monetary incentive, or pay-for-performance, programs are especially prominent within the health care industry, with more than half of commercial health maintenance organizations using these programs (Rosenthal, Landon, Normand, Frank, & Epstein, 2006).

In comparison to hourly pay, monetary incentives have consistently been shown to increase performance (for reviews, see Bucklin & Dickinson, 2001; Dickinson & Gillette, 1993; Jenkins, Gupta, Mitra, & Shaw, 1998). However, frequent performance feedback was available in many of the studies reviewed by Bucklin and Dickinson. Although research has demonstrated that monetary incentives can enhance the effectiveness of feedback (Bucklin et al., 2003), research has not yet demonstrated whether feedback enhances incented performance.

Bucklin et al. (2003) and Johnson, Dickinson, and Huitema (2008) hypothesized that incented performance might be elevated by the addition of performance feedback. Their rationale was that feedback may become a conditioned reinforcer because of its link to differential rewards. Both proposed that the addition of feedback to incentive systems might be one factor accounting for comparable performance levels across variations in performance-pay systems, and that performance feedback might sustain performance under a variety of parameters of monetary incentive systems (e.g., percentage of total and base pay earned in incentive pay, the schedule of incentive delivery, and the amount of the per piece incentive). Bucklin et al. and Johnson et al. also

controlled for two other factors, lack of attractive alternative activities and the social demands associated with the presence of the experimenter, which may confound the results of laboratory studies assessing the effects of monetary incentives on performance.

In their study, Bucklin and colleagues (2003) evaluated the effects of individual monetary incentives with and without feedback and compared the effects of individual monetary incentives versus hourly pay when both were combined with feedback. For all participants, performance increased when feedback was added to the incentive condition and was higher than performance during the feedback plus hourly pay condition. The results of their study suggest that feedback enhanced incentive performance. These results should be considered with caution, however. When feedback was removed from the incentive condition, performance for all participants either stabilized or continued to increase (i.e., did not reverse). The authors suggest that higher levels of performance were maintained by the additional incentives earned and that this effect overrode any differential effects of performance feedback.

Different results were obtained by Johnson and colleagues (2008). In their study, Johnson et al. assessed the effects of objective feedback on the performance of individuals who received either fixed (hourly) pay or individual monetary incentive pay. Although the performance of those who received incentive pay increased significantly more than those who received fixed pay (i.e., participants who received feedback and incentives correctly completed more checks), the receipt of objective feedback did not produce statistically significant effects. These results do not support the suggestion that objective feedback, when correlated with monetary incentives, becomes a conditioned reinforcer and functions to reinforce performance improvements itself. Rather, Johnson et

al. propose that objective feedback may, instead, remain a neutral stimulus which does not enhance performance even when paired with monetary incentives. Johnson and colleagues affirm that the effects of this type of feedback are likely to differ among individuals, depending on each person's history of reinforcement and the degree to which feedback with an evaluative component has been paired with the receipt of valued rewards.

Two important considerations for the opposing results of the Bucklin et al. (2003) and Johnson et al. (2008) studies include (a) the types of feedback differed and (b) it is unknown whether participants actually looked at the feedback. Although the feedback procedures used in both studies provided objective feedback with regard to performance of the experimental task, it is possible that Bucklin et al. may have provided some form of verbal praise or another evaluative statement along with the feedback. Johnson and colleagues set up their study such that evaluative statements were not paired with the objective feedback given to their participants.

Even more importantly, the results of these studies may be confounded by whether participants looked at feedback. Bucklin and colleagues (2003) provided end-of-session feedback in which the number of points earned by an individual was displayed on the computer screen at the end of each session. Johnson et al. (2008) provided continuous, on-screen feedback indicating the total number of checks completed correctly at that point in the session and the participant's current rate of check completion. Although both types of feedback were available on the computer screen, there was no measure of whether participants attended to it. Furthermore, anecdotal support exists which contends that participants only occasionally view feedback that is constantly

available during experimental sessions (Hwang & Dickinson, 2007). The contradictory results found by Bucklin et al. and Johnson et al. warrant future research to examine more direct measures of the reinforcing value of feedback that enable the detection of when individuals attend to or come into contact with performance feedback. This, in turn, permits an assessment of the conditions under which individuals will self-solicit feedback, which may or may not enhance performance.

Self-Solicited Feedback and Observing Behavior

As mentioned earlier, self-solicited feedback is defined as performance feedback that can be immediately obtained by an individual performer at any time while they are performing a task. The response of soliciting feedback appears to be related to what researchers have traditionally referred to as an observing response. Observing responses are responses made to obtain stimuli that provide the respondent with information on the availability of reinforcement or non-reinforcement (Wyckoff, 1952, 1969). An observing response is usually topographically different from an effective response that is instrumental in obtaining the reinforcer. Observing responses typically function to produce a discriminative stimulus (S^D) or an S-delta (S^Δ) depending on whether reinforcement or extinction conditions are in effect (Pierce & Cheney, 2004). In the literature, this pair of stimuli has also been referred to as consisting of a stimulus associated with reinforcement or some positive consequence (S^+), and a stimulus associated with non-reinforcement or some negative consequence (S^-). Observing responses do not alter the rate or probability of obtaining reinforcement; that is, the only function of these responses is to present the stimulus correlated with the current schedule of reinforcement.

Two primary hypotheses (i.e., conditioned reinforcement and uncertainty reduction) regarding the maintenance of observing behavior have been studied extensively with both non-humans and humans. Results of a recent literature review (Fante & Slowiak, 2007) revealed that findings from non-human and human research remain mixed, although the majority of non-human research supports the conditioned reinforcement hypothesis (e.g., Dinsmoor, Browne, & Lawrence, 1972; Jenkins & Boakes, 1973; Kelleher & Gollub, 1962; Kendall, 1973; Mulvaney, Dinsmoor, Jwaideh, & Hughes, 1974). According to the conditioned reinforcement hypothesis, observing behavior is maintained because of the conditioned reinforcing strength of the stimulus correlated with the more positive outcome. In contrast, more recent research on human observing suggests that observing responses are maintained in order to obtain information resulting in a reduction in uncertainty about the possibility of reinforcement (e.g., Lieberman, Cathro, Nichol, & Watson, 1997; Tomanari, 2004).

Researchers have argued that the two hypotheses are similar. The uncertainty reduction hypothesis may or may not be described in terms of conditioned reinforcement, and thus it may be considered to be compatible with the conditioned reinforcement hypothesis. One might argue that a stimulus that becomes a conditioned reinforcer does so because it reduces uncertainty (Fantino, 1977). However, Jenkins and Boakes (1973), made the distinction between these hypotheses by stating that both “the negative value as well as the positive value of the informative stimulus variable reinforces the observing response” (p.198). Therefore, regardless of which hypothesis proves true, it appears that in both cases the stimulus produced by the observing response functions as a conditioned reinforcer.

Although no studies were found that examined observing behavior in organizational settings, an observing response in the form of the self-solicitation of feedback would appear to be a reasonable way to measure the conditioned reinforcing effectiveness of feedback. Johnson et al. (2008) stated that feedback might augment the effects of behavioral consequences because feedback may function as a conditioned reinforcer due to its history of being delivered concurrently with other reinforcers. Given that many studies evaluating the use of monetary incentives also included a feedback component, it is worth determining whether and how often individuals will solicit performance feedback while receiving monetary incentives and assessing whether self-soliciting feedback occurs more often when paid incentives than when paid hourly. The assumption is that feedback would be a stronger conditioned reinforcer because of its link to monetary incentives or because it reduces the uncertainty of earning additional incentives.

If self-solicited feedback does indeed function as a conditioned reinforcer, we would expect the response of soliciting performance feedback to occur more often under a monetary incentive condition than under an hourly pay condition. This is because pay received under the monetary incentive condition is directly associated with performance, whereas pay received under the hourly pay condition is unrelated to performance. Moreover, soliciting feedback on one's performance during the incentive condition would allow performers to better estimate the amount of pay they are earning at any given time during the task. Thus, self-solicited feedback during this condition is paired with money, a well-known conditioned reinforcer, and reduces the uncertainty of the amount of incentive pay.

On the other hand, self-solicited feedback may not function as a conditioned reinforcer and therefore self-solicitation may not occur more often under the monetary incentive condition. One possibility for this might be that the response of soliciting feedback may hinder performance under the incentive condition because the individual must stop engaging in the task at hand in order to obtain this feedback. As a result of stopping the task to solicit feedback, it is possible the individual may earn less money than they would have if they had continued to work without soliciting performance feedback. Under an hourly pay condition, soliciting feedback has no effect on the amount of money an individual earns.

It is also the case that self-solicitation of feedback may not occur more often in the incentive condition when paired with feedback that does not contain an evaluative component. Based on the results of their study, Johnson et al. (2008) speculated that “objective” feedback, absent evaluation, is unlikely to increase performance even when correlated with performance-contingent rewards. Similarly, it may be that such feedback does not acquire reinforcing value.

Theoretical and Applied Implications

Determining the conditions under which soliciting performance feedback will occur and the conditions under which this response is more beneficial to the performer has important theoretical and applied implications. If feedback is solicited at a greater rate when paired with monetary incentives, this result would lend support for the theory that feedback functions as a conditioned reinforcer and, hence, may enhance the effects of monetary incentives. Additionally, if incented performance is not hindered by the solicitation of performance feedback (i.e., task performance is higher under the monetary

incentive condition than under the hourly pay condition), this type of feedback system might be the most beneficial in organizational settings because the response effort for both management and for the performer is low. Thus, this type of feedback system might be easier to institutionalize within an organization. On the other hand, it is possible that this type of feedback system may not be a beneficial component of monetary incentive systems; instead, it may be found to be more useful when individuals are paid an hourly rate. Specifically, although obtaining feedback under this condition would have no effect on pay, the feedback itself may become a conditioned reinforcer and thus increase performance.

It is important to mention that feedback could function as a conditioned reinforcer due to its correlation with reinforcers other than monetary incentives, and thus task performance may be influenced by the effects of pairing performance feedback with those reinforcers as well. For example, when individuals have a history of reinforcement in which improved performance has been associated with valued rewards and benefits, improved performance may itself become a conditioned reinforcer (Skinner, 1953). Feedback associated with improved performance could then come to function as a conditioned reinforcer, enhancing performance. Others have discussed this effect using different terminology, suggesting that feedback can influence a person's performance by increasing the performer's perceived competence or achievement motivation (Ilgen et al., 1979; Kopelman, 1986).

Bandura and Cervone's (1983) results appear to support the idea that improved performance can function as a reinforcer. In their study that examined the motivational effects of goals, 70% of the participants in the no-goal condition self-set goals to perform

higher than they had in the past. Similarly, in a recent study conducted by Hwang and Dickinson (2007), six out of eight participants reported setting goals during a social comparison feedback phase in which participants were able to compare their own performance to the performance of others in the study.

If it is true that feedback functions as a conditioned reinforcer due to its link with other reinforcers (e.g., improved performance and/or performing better than others), then the solicitation of feedback might be controlled by the extent to which individuals find these other reinforcers reinforcing as well as by the type of pay system (i.e., hourly pay vs. incentive pay). It is also possible that other variables, such as improved performance, might exert stronger control over feedback solicitation than the type of pay system, depending upon the relative reinforcing value of those variables versus the amount of the incentive pay.

Role of Personality in Work Motivation

A renewed interest in the role of personality variables in motivation is evident in the literature (e.g., Barrick & Mount, 1991; Heggstad & Kanfer, 2000; Hinsz & Jundt, 2005; Kanfer & Ackerman, 2000; Kanfer & Heggstad, 1997). Research has shown that a positive relationship exists between the amount of feedback received and task performance for individuals who have a high need for achievement (Steers, 1975). Ilgen et al. (1979) contend that feedback provides three types of information to individuals, including (a) a sense of competence, (b) a sense of personal control over the task, and (c) the extent to which extrinsic rewards will be obtained. Ilgen and colleagues maintain that individuals who have a high need for achievement prefer feedback that conveys the first two types of information, while those whose needs are satisfied externally (i.e., have a

high need for affiliation) prefer feedback that provides information about extrinsic rewards.

Research has typically addressed competitiveness as one of several motivational traits thought to underscore the role of personality in both work and achievement motivation. Yet, as a personality trait itself, competitiveness has not received as much attention in the literature as other personality variables, regardless of the fact that it has been deemed important in many social environments (e.g., sports, academia, work) (Houston, Farese, & La Du, 1992). One reason for the lack of research on competitiveness may be the neglect of researchers to develop measures of this trait which, as Smither & Houston (1992) point out, are (a) independent of measures of achievement motivation, (b) psychometrically sound, and (c) generalizable.

Competitiveness is generally described in the social sciences literature as the desire to win in interpersonal situations (e.g., Helmreich & Spence, 1978; Jenkins, Zyzanski, & Rosenman, 1979; Kildea, 1983; Kohn, 1986), and there is some evidence to suggest that higher levels of competitiveness are related to higher levels of performance (Hinsz & Jundt, 2005). Schmitt (1986) proposes four variables which may affect reinforcement conditions for competitors and which may prove useful in developing a behavioral interpretation of competition: (a) performance variations, (b) the basis of reinforcement, (c) reinforcer distribution, and (d) stimuli that indicate the performance of other competitors (e.g., social-comparison feedback). Furthermore, Schmitt proposes that the first time individuals engage in a task, they are not affected by current competitive contingencies. In this case, performance can be described as a function of the individual's

past history with the task (or similar tasks), along with their past history of competition and current task-related instructions.

In more traditional terms, Schmitt's (1986) former analysis is related to "competition with others," while his latter analysis is related to "competition with self." As discussed earlier, stimuli associated with "performing better than others" or "performing better than one has performed in the past" could acquire reinforcing value due to correlation with valued rewards. Schmitt's analysis also suggests that a person may perform better even when others are not present due to the generalization of past competitive contingencies when others have been present and performing the same task.

For purposes of the current study, we were particularly interested in the impact that individual differences in levels of competitiveness might have on feedback solicitation and task performance. Evaluating competitiveness as a personality variable is deemed worthwhile, as reports from a previous study indicate that participants sometimes set goals while performing the same experimental task used in this study in an attempt to out-perform themselves or others during subsequent sessions (Hwang & Dickinson, 2007). Thus, we would presume, based on these reports and Schmitt's (1986) proposal, that (a) individuals in the current study would set performance-related goals, (b) the performance of individuals in the current study and the type of goals they set would be influenced by their previous experience with competitive conditions, and (c) participants' levels of competitiveness – assumed to be affected by history with competition – would be associated with feedback solicitation and task performance.

The *Motivational Trait Questionnaire* (MTQ; Heggstad & Kanfer, 2000; Kanfer & Ackerman, 2000) was used to assess traits associated with work motivation, including

the specific impact of individual differences in competitiveness. The shortened form of the *MTQ* is a measure of three motivational traits thought to underscore the role of personality in both work and achievement motivation (Hinsz & Jundt, 2005). These traits include (a) personal mastery, (b) competitive excellence, and (c) motivation anxiety (Kanfer & Ackerman). According to Heggstand and Kanfer, individuals with a high level of *personal mastery* are those whom prefer challenging tasks and are often competitive with themselves; those scoring high in *competitive excellence* define success in comparison to how others are performing and seek to out-perform others, even in non-competitive situations; those scoring high in *motivation anxiety* have feelings of avoidance, apprehension, and anxiety that are felt when individuals are performing an evaluative task.

The *MTQ* was chosen for this study because it measures both competition with one's self (*mastery goals* subscale of the Personal Mastery scale) and competition with others (*other referenced goals* and *competition seeking* subscales of the Competitiveness Excellence scale). Another reason it was chosen was because Hinsz and Jundt (2005) found that *MTQ* scores correlated positively with the performance of an actual task as well as with participants' personal goals (i.e., the level of goals participants set for themselves). Similarly, Ward (2005) found that *MTQ* scores correlated with self-set goal difficulty when performing a problem-solving task.

Purpose of Current Study

The primary purpose of the current study was to evaluate the frequency of feedback solicitation under hourly pay and monetary incentive pay conditions. Like previous studies (e.g., Bucklin et al., 2003; Johnson et al., 2008; McGee, Dickinson,

Huitema, & Culig, 2007), this study controlled for two potential confounds common in laboratory studies: (a) lack of attractive alternative activities and (b) social demands due to the presence of the experimenter. Researchers have hypothesized that these variables may have been responsible for the failure to produce performance differences under incentive and feedback conditions (Bucklin et al.; Matthews & Dickinson, 2000; Mawhinney, 1975).

In this study, computer games served as alternative tasks that performers were able to access at any time during the experimental sessions. The inclusion of attractive alternative activities reduced the possibility that individuals would remain continuously engaged in the experimental task and work at higher-than-typical rates. Although computer games are only one example of typical off-task activities that exist in the workplace, they have been used in previous studies on incentives and have been effective in producing off-task behavior (e.g., Bucklin et al., 2003; Johnson et al., 2008; Matthews & Dickinson, 2000).

Common in most work environments, the presence of a supervisor can have an effect on worker performance; specifically, workers may engage in on-task activities more often when their supervisor is present because they have a behavioral history in which productive behaviors have been reinforced and unproductive behaviors have been punished. To reduce the potential social demands of the experimenter, the experimenter was not present during experimental sessions. Similar to a work environment, the presence of the experimenter may artificially inflate performance of individuals, which may eliminate performance differences that are predicted to occur under monetary incentive and hourly pay conditions.

Furthermore, the present study both controlled for and evaluated the influence of competitiveness in order to ascertain whether (a) the frequency of feedback solicitation varied under incentive pay and hourly pay when individual differences in competitiveness were controlled for and (b) the extent to which competitiveness was associated with self-solicitation of feedback. Information on participants' levels of competitiveness (i.e., individual scores from the *mastery goals*, *other referenced goals*, and *competition seeking* subscales of the *MTQ*) was collected and used as a covariate during data analysis.

Task performance was also assessed in the current study to identify (a) overall differences in performance between participants receiving incentive pay versus those receiving hourly pay while controlling for keyboard proficiency, and (b) the extent to which self-solicitation of feedback was related to task performance.

In summary, the current study examined the frequency and conditions under which individuals solicited feedback on their performance while performing a data entry task. The primary question we sought to answer was whether individuals would solicit feedback more when paid monetary incentives than when paid hourly. Additionally, we wanted to determine whether self-solicitation of feedback would be correlated with an individual's level of competitiveness. This would enable us to determine whether competitiveness might have overridden any effects due to the pay system. Finally, this study evaluated the extent to which self-solicitation of feedback influenced task performance.

METHOD

Participants

Participants were 60 male and female undergraduate students enrolled in courses at Western Michigan University, with the exception of those who had taken or were enrolled in Organizational Psychology (PSY 3440), Industrial/Organizational Behavior Analysis (PSY 4440), or Survey of Behavior Analysis Research (PSY 4600) at the start of the study. This exclusionary criterion was included because the effects of monetary incentives and feedback on work performance are taught in these courses, and knowledge of these effects could have influenced how participants responded in the current study. Recruitment consisted of the use of both in-class announcements (see Appendix A for the recruitment script) and posted flyers within university buildings (see Appendix B for the recruitment flyer).

Potential participants were screened according to three criteria. First, only participants who self-reported that they played computer games for at least one hour each week and reported interest in at least one of seven computer games listed on a screening questionnaire were included (see Appendix C for the screening questionnaire). Computer games were provided as alternative off-task activities, similar to that which may be available in the work place. Therefore, meeting this criterion ensured the computer games were attractive to students, and that the computer games would serve as appealing off-task activities.

Second, participants were only included if they scored 100% on a quiz that tested their understanding of the hourly and monetary incentive pay systems used in this study (see Appendix D for the pay systems quizzes). Participants took the quiz about the pay

system to which they were exposed; that is, participants assigned to the incentive pay group took the quiz about the incentive pay system, and participants assigned to the hourly pay group took the quiz about the hourly pay system. The quiz was administered to participants after the experimenter explained the respective pay system to the participant, and participants were allowed to retake the quiz one time, if needed. Meeting this criterion ensured that participants were able to accurately calculate the amount of pay they would receive under their respective pay condition.

The final criterion for inclusion in the study was that participants were able to schedule and attend four 45-minute experimental sessions within a two-week period of time. This criterion was included to ensure the study was completed in a timely manner and, more importantly, that participants were exposed to the experimental conditions within a short period of time, increasing the saliency of the independent variable.

Participants were paid for their participation in this study; payment procedures are described in more detail in the *Independent Variable* and *Experimental Procedures* sections. Prior to being screened for inclusion in the study, participants were asked to sign a consent form approved by Western Michigan University's Human Subjects Institutional Review (HSIRB; see Appendix E). Only participants who signed the informed consent form were screened and considered for inclusion in the study.

All methodological procedures and other elements of this study were approved by Western Michigan University's HSIRB (see Appendix F for the HSIRB approval letter).

All potential participants met the aforementioned criteria and completed the study; that is, no participants withdrew before completion.

Setting

The experimental setting consisted of one of three small rooms and the Performance Management Laboratory (PM Lab). The three rooms were located in 2510, 2512, and 2514 Wood Hall, and the PM Lab was located in 2532 Wood Hall. In the small rooms, each participant was provided with a work area containing a table, adjustable chair, computer, keyboard, mouse, and gel palm rest. The PM Lab across the hall was used as a “waiting area” for participants prior to beginning their experimental sessions, as well as to confirm subsequently scheduled sessions following their sessions.

Materials, Experimental Task, and Alternative Activities

Motivational Trait Questionnaire (MTQ). The MTQ is a 48-item questionnaire that assessed three motivational traits, each with two subscales: (1) personal mastery: desire-to-learn and mastery goals subscales, (2) competitive excellence: other referenced goals and competition seeking subscales, and (3) motivation anxiety: worry and emotionality scales. Responses to each item are made using a 6-point response scale ranging from 1 (*very untrue of me*) to 6 (*very true of me*). Some examples of items on the MTQ include: “I set goals as a way to improve my performance” and “It is important for me to outperform my co-workers.” Participant instructions and a larger sample of questionnaire items can be found in Appendix G (a full copy cannot be included because the instrument is protected by copyright). Individual scores for each of the subscales are calculated by adding up the points of each of the responses to the items for the respective subscales.

Experimental task. The experimental task was a data entry task that simulated the job of a bank proof operator. An image of a simulated bank check was displayed on the

computer screen with a randomly generated dollar amount, ranging in value from \$10.00 to \$999.99 (see Appendix H for a screen shot of the check program). Using the computer's numeric keypad, participants entered the dollar amount of the check into a box in the lower, right corner of the computer screen. To complete the action, the participant pressed the "Enter" key, and the next check was displayed on the screen. Participants could also use the computer mouse to click on the "Next Check" button to advance to the next check.

At any time during the experimental session, participants were able to obtain information about their current level of performance by either (a) holding down the "Alt+F" keys on the keyboard or (b) clicking on the "Feedback" button using the mouse. The "Feedback" button was located above the graphic display of the bank check (within the Program Controls menu). When this button was clicked, a dialogue box was presented on the computer screen and contained (1) the current number of checks completed during the session, (2) the current number of checks completed correctly during the session, and (3) the current rate of check completion (i.e., average number of checks completed per minute), which was updated every 30 seconds. The feedback dialogue box remained on the screen until the "OK" button was clicked on the dialogue box or until the "Enter" key was pressed on the keyboard. Participants were not able to continue to enter data while the feedback dialogue box was displayed on the screen.

Alternative activities. Seven computer games were available on each computer, and participants had access to these games at all times during the experimental sessions. These games included Tetris, Hearts, Pinball, Solitaire, Spider Solitaire, FreeCell, and Minesweeper. Instructions on how to play these games were available in each

experimental room near the computer. To access the games, participants had to minimize the experimental task program, which could be done by using the computer mouse to click on the “Minimize Program” button.

Dependent Variables

The primary dependent variable was the total number of times the “Feedback” button was clicked to obtain performance feedback. This variable was termed *self-solicited feedback* and is reported as the total number of times the participant clicked on the “Feedback” button during each experimental session. The times during the experimental session that participants self-solicited feedback were also collected and are reported as the frequency of feedback solicitation during 5-min intervals of time throughout the experimental session.

Secondary dependent variables included (a) the total number of checks correctly completed per session (i.e., task performance), (b) the percentage correct per session, (c) the time spent performing the experimental task, and (d) the rate of correct check completion. Of these secondary measures, the first (task performance) could potentially be affected by the other three secondary variables: accuracy while working on the task, the amount of time spent on the task, and the pace of performance while on task.

Therefore, it was valuable to include all as secondary dependent variables.

The computer automatically recorded (a) the number of times the “Feedback” button was clicked per session, (b) the points in time during the experimental session that participants self-solicited feedback, (c) the total number of checks completed per session, (d) the number of checks completed correctly per session, and (e) the number of seconds the participant was not engaged in the experimental task (i.e., time spent off-task). The

percentage of checks correctly completed per session was calculated by dividing the number of checks correctly completed by the total number of checks completed and multiplying by 100. Time spent off-task was recorded by the computer program when the participant was not performing the experimental task for 10 seconds. When the participant resumed work on the check program, the computer stopped recording “off-task” activity. Time spent on-task was calculated by subtracting the total time spent off-task from the session length. Rate of correct check completion was calculated by dividing the number of checks completed correctly by the time (in minutes) spent on-task.

Following each experimental session, the researcher saved all session data electronically onto a disk that was unique for each participant. Data were also recorded manually onto a data sheet (see Appendix I); both of these steps were taken to minimize the chance that data would be lost due to a computer malfunction.

Independent Variable

The independent variable was the type of pay system (hourly pay vs. individual monetary incentive pay).

Hourly pay. In the hourly pay condition, participants were paid \$5.75 for each 45-minute session regardless of their performance on the experimental task. An instructional script was read to participants before they began their first session (see Appendix J).

Individual monetary incentive pay. In the incentive pay condition, participants earned incentives based on their performance during the experimental session. For every correctly processed check, participants earned \$0.007. Thus, to earn the amount equivalent to those in the hourly pay condition, participants needed to correctly process 821 checks (i.e., $821 \times \$0.007 = \5.75). These figures were based on the average

performance of participants who were paid individual incentives in the Johnson et al. (2008) study. If participants in the incentive condition processed more than 821 checks correctly, they earned more money than those in the hourly pay condition due to the incentive pay. The instructional script that was read to participants before they began their first session is provided in Appendix K.

Experimental Design and Statistical Analysis

A randomized group design was used, and participants were randomly assigned to one of the two groups. The hourly pay and monetary incentive pay conditions each contained 30 participants.

Primary analyses. A one-factor analysis of variance (ANOVA) was used to evaluate whether the average number of times participants solicited feedback (i.e., clicked the “Feedback” button) differed across the two experimental groups. A descriptive analysis was carried out to examine the average frequency of feedback solicitation during 5-min intervals across experimental sessions for both pay groups.

Following the initial analyses, correlational analyses using the Pearson product moment correlation were carried out to determine whether and what degree of association existed between feedback solicitation and individual levels of competitiveness, as assessed by three subscales of the *MTQ*: mastery goals, other referenced goals, and competition seeking. One-factor analyses of covariance (ANCOVA) were then used to evaluate whether the average number of times participants solicited feedback differed across the two experimental groups using individual participant scores from the *MTQ* subscales as the covariates. These covariates partially controlled for individual

differences among the participants' response of soliciting feedback with respect to levels of competitiveness.

Secondary analyses. Additional analyses were conducted to evaluate the effects of the type of pay system and self-solicitation of feedback on task performance. An ANCOVA was used to determine whether the average number of checks completed correctly differed among participants in the hourly pay and incentive pay conditions while controlling for keyboard proficiency. The covariate for this analysis was the rate of correct check completion per minute during the pre-test session.

Next, a correlational analysis was performed to assess the extent to which self-solicitation of feedback was related to task performance. Additional analyses evaluated the association between the average number of checks completed correctly per session and (a) the average time (in minutes) spent on-task per session, (b) the average percentage of checks completed correctly per session, and (c) the rate of correct check completion per minute per session.

Experimental Procedures

Random assignment. Participants were randomly assigned to either the hourly pay or incentive pay condition and assigned a participant number prior to the introductory sessions. These procedures were necessary because two different consent forms were used, one specific to each of the two pay conditions, in order to prevent participants from knowing that the two different conditions existed. The random assignment procedure described by Shadish, Cook, and Campbell (p. 313, 2002) was used.

Payment. All participants were paid in cash at the end of the study. This procedure was necessary to control for any potential confounding effects of payment as

another source of feedback, in addition to self-solicited feedback, related to the performance of the experimental task. This was relevant for individuals in the monetary incentive pay condition as their pay was directly tied to their performance.

Introductory session. During the introductory session, the researcher explained the following aspects of the study to all potential participants: (a) the experimental task, (b) the appropriate pay system and procedures, and (c) the time requirements for participation. Following this explanation, signed consent was sought. Potential participants for whom consent was obtained underwent the screening process to determine whether they met all the criteria described in the *Participants* section.

Participants were asked to complete the *MTQ* to obtain measures of individual competitiveness. After completing the *MTQ*, participants were asked schedule their pre-test (described in the next section) and experimental sessions. Finally, participants were taken into one of the experimental rooms and given the opportunity to try the experimental task and the available computer games. Participants were paid \$5.75 for their attendance at the introductory session; however, this amount was paid to participants at the end of the study.

Pre-test session. A 45-minute pre-test session was required of all participants, and participants were paid \$5.75 for attending this session. The rate of correct check completion per minute during this session was used as covariate data to control for differences in initial keyboard proficiency.

Before beginning the pre-test session, the researcher met with participants in the PM Lab (Wood Hall 2532) and gave the following instructions to participants: "People have very different keyboard skills. During this first session, we want to determine your

skill level. Therefore it is very important that you work as hard as you can. You will earn \$5.75, and we will pay you for this session at the end of the study. Please leave your personal belongings in this room, including cell phones, pagers, MP3 players, iPods, and any other similar electronic devices. If you need anything, just come get me – I will be in this room. I will come and stop the session after 45 minutes. Again, please try to complete as many checks as you can. Do you have any questions?”

Experimental sessions. Three 45-minute experimental sessions over a two-week period were scheduled for each participant. Participants met the researcher in the PM Lab prior to each session before they were taken into the experimental room. Instructions about the experimental task were given to participants before their first session (see Appendices J and K for instructional scripts). At the end of the 45-minute session, the researcher knocked on the door and entered the experimental room to signal the end of the session. The researcher thanked the participant for his or her time and asked the participant to return to the PM Lab to confirm his or her next scheduled experimental session.

Debriefing session. Immediately after their last experimental session, participants attended a debriefing session. This session was held in the PM Lab (2532 Wood Hall), and participants were given feedback on (a) how many checks they completed correctly each session, (b) how many total checks they completed correctly during the study, and (c) how many times they solicited feedback on their performance during each session (see Appendix L for feedback forms). Participants were also asked to complete a short post-study questionnaire (Appendix M) to obtain information such as (a) participants’ perception of the purpose of the study, (b) participants’ awareness of the experimental

procedures, (c) participants' satisfaction with the option to solicit performance feedback, and (d) participants' self-reported goal setting behavior. After completing the questionnaire, participants were debriefed regarding the purpose of the study (see Appendix N for debriefing script), asked whether they had any questions, and paid (in cash) for their participation in the study.

Independent Variable Integrity

Procedures were in place to ensure (a) the data were recorded accurately, (b) pay amounts were calculated appropriately, (c) pay systems were administered correctly, and (d) experimental procedures were administered as described previously. At the beginning of each week, the researcher tested the computer program to verify the accuracy of data collection procedures. In addition, a pay chart (see Appendix O) was used to ensure participants in the incentive pay condition received the appropriate amount of pay per session, reducing the need to manually compute payment amounts. Payment amounts for participants in the incentive pay condition were determined by comparing the number of correctly processed checks recorded by the computer program to the pay chart. All payment amounts were verified by the experimenter by calculating inter-observer agreement (dividing the number of agreements by the number of agreements plus disagreements and multiplying by 100). Inter-observer agreement was 100%. Scripts (see Appendices J and K) were used and read to participants at the start of each experimental session to ensure the pay systems for each condition were administered correctly. Finally, job aids (i.e., checklists) were employed during the pre-test and experimental sessions to ensure procedures were implemented properly.

RESULTS

Primary Analyses

The main purpose of the study was to determine whether participants would self-solicit feedback more when they were paid individual incentives than when they were paid hourly. The average frequency of feedback solicitation during experimental sessions was 6.89 ($SD = 5.44$) for the hourly group and 5.33 ($SD = 4.76$) for the incentive group.

Table 1 shows the source table for the results of the ANOVA. The obtained difference in frequency of feedback solicitation between the incentive pay and hourly pay groups of 1.56 was not statistically significant, $F(1, 58) = 1.39, p = 0.243$. Thus, participants did not self-solicit feedback more when they were paid individual monetary incentives.

Table 1

Analysis of Variance for Feedback Solicitation

Source	df	SS	MS	F	<i>p</i>
Pay System	1	36.30	36.30	1.39	0.243
Error	58	1514.70	26.10		
Total	59	1551.00			

Figure 1 displays the average frequency of feedback solicitation for each pay group during 5-min intervals across all three experimental sessions. This figure shows an increasing trend across time for participants in the incentive group; specifically, feedback solicitation increased as time to the end of the session approached. Frequency of feedback solicitation was variable across session intervals (i.e., no apparent trends) for participants in the hourly group.

Figure 1. Average frequency of feedback solicitation for each pay group during 5-min intervals.

To determine whether competitiveness was related to self-solicitation of feedback, Pearson product-moment correlations were conducted between feedback solicitation and individual levels of competitiveness as assessed by three subscales of the *MTQ*: mastery goals, other referenced goals, and competition seeking. Table 2 displays these correlations; none were statistically significant.

Table 2

Pearson Correlations Between Feedback Solicitation and *MTQ* Subscales

Frequency of Feedback Solicitation Correlated with:	<i>r</i>	<i>p</i>
Mastery Goals	-0.24	0.07
Other Referenced Goals	0.03	0.80
Competition Seeking	-0.02	0.91

To evaluate whether the frequency of feedback solicitation varied under incentive pay and hourly pay when individual differences in competitiveness were controlled for, ANCOVAs were conducted. Individual scores from the *mastery goals*, *other referenced goals*, and *competition seeking* subscales of the *MTQ* were covariates.

The adjusted means for the feedback solicitation data, using *mastery goals* as a covariate, were 6.85 for the hourly group and 5.37 for the incentive group. Table 3 shows the source table for the results of the ANCOVA. The obtained difference in frequency of feedback solicitation of 1.48 was not statistically significant, $F(1, 57) = 1.30, p = 0.259$.

Table 3

Analysis of Covariance for Feedback Solicitation (Covariate: Mastery Goals)

Source	df	SS	MS	F	<i>p</i>
Covariate	1	82.52	82.52	3.28	0.075
Pay System	1	32.65	32.65	1.30	0.259
Error	57	1432.22	25.13		
Total	59	1551.04			

The adjusted means for the feedback solicitation data, using *other referenced goals* as a covariate, were 6.95 for the hourly group and 5.27 for the incentive group. Table 4 shows the source table for the results of the ANCOVA. The obtained difference in frequency of feedback solicitation of 1.68 was not statistically significant, $F(1, 57) = 1.55, p = 0.219$.

Table 4

Analysis of Covariance for Feedback Solicitation (Covariate: Other Referenced Goals)

Source	df	SS	MS	F	<i>p</i>
Covariate	1	6.37	6.37	0.24	0.626
Pay System	1	40.95	40.95	1.55	0.219
Error	57	1508.37	26.46		
Total	59	1551.04			

The adjusted means for the feedback solicitation data, using *competition seeking* as a covariate, were 6.90 for the hourly group and 5.33 for the incentive group. Table 5 shows the source table for the results of the ANCOVA. The obtained difference in frequency of feedback solicitation of 1.57 was not statistically significant, $F(1, 57) = 1.36, p = 0.249$.

Table 5

Analysis of Covariance for Feedback Solicitation (Covariate: Competition Seeking)

Source	df	SS	MS	F	<i>p</i>
Covariate	1	0.14	0.14	0.01	0.943
Pay System	1	36.08	36.08	1.36	0.249
Error	57	1514.60	26.57		
Total	59	1551.04			

The three preceding analyses indicate that frequency of feedback solicitation did not vary under incentive pay and hourly pay when individual differences in levels of competition with one's self (*mastery goals*) and competition with others (*other referenced goals* and *competition seeking*) were controlled for.

Secondary Analyses

To determine whether the average number of correctly completed checks differed for the two pay groups, an ANCOVA was conducted using keyboard proficiency as the covariate. The rate of correct check completion per minute during the pre-test session was used as the measure of keyboard proficiency.

The average number of correctly completed checks during experimental sessions was 632.4 ($SD = 258.1$) for the hourly group and 885.7 ($SD = 200.0$) for the incentive group. The adjusted means for task performance, using keyboard proficiency as a covariate, were 635.94 for the hourly group and 882.14 for the incentive group. Table 6 shows the source table for the results of the ANCOVA. The obtained difference of 246.2 checks for the pay system variable was statistically significant, $F(1, 57) = 32.10$, $p = 0.000$. Thus, participants completed more checks correctly when they were paid individual monetary incentives.

Table 6

Analysis of Covariance for Number of Correctly Completed Checks

Source	df	SS	MS	F	<i>p</i>
Covariate	1	1477537	1477537	52.20	0.000
Pay System	1	908798	908798	32.10	0.000
Error	57	1613514	28307		
Total	59	4052958			

To determine whether there was a relationship between feedback solicitation and task performance (i.e., whether participants who self-solicited feedback also performed

better), a Pearson product-moment correlation was conducted. The relationship between these variables was not statistically significant, $r = -0.100$, $p = 0.447$.

The number of correctly completed checks (task performance) could have been affected by three variables: (a) percentage of checks completed correctly, (b) the rate of correct check completion, and (c) time on-task. Table 7 displays the means and standard deviations for these variables for both pay groups.

Table 7

Means and Standard Deviations for Percentage of Correctly Completed Checks, Rate of Correct Check Completion, and Time On-Task

	Dependent Variable					
	Percentage of Correctly Completed Checks		Rate of Correct Check Completion		Time On-Task	
Pay System	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Hourly	98.29	1.20	19.47	3.69	31.99	10.28
Incentive	98.24	1.23	20.62	3.79	42.82	4.54

Table 8 displays the Pearson product-moment correlations between the number of correctly completed checks and these variables. Two of the three correlations were statistically significant at the .001 level. The relationship between the number of correctly completed checks and the percentage of correctly completed checks was nonsignificant. Strong relationships were seen between the number of correctly completed checks and both the number of checks completed per minute and the time spent on task. These results suggest that the number of correctly completely checks was influenced by both of these factors.

Table 8

Pearson Correlations Between Number of Correctly Completed Checks and Percentage of Correctly Completed Checks, Rate of Correct Check Completion, and Time On-Task

Number of Correctly Completed Checks Correlated with:	<i>r</i>	<i>p</i>
Percentage of Correctly Completed Checks	0.107	0.416
Rate of Correct Check Completion	0.732	0.000
Time On-Task	0.835	0.000

Self-Report Data

Ninety-two percent (N = 55) of participants engaged in feedback solicitation during the experimental sessions. Table 9 displays the frequency and percentage of participant responses obtained from items on the post-study questionnaire with regard to self-solicited feedback.

Table 9

Participant Comments: Self-Solicited Feedback

Item	Response		
	Yes	No	N/A or No Response
Liked option to solicit feedback	51 (85%)	3 (5%)	6 (10%)
Would prefer another type of feedback	14 (23%)	45 (75%)	1 (2%)
Felt feedback improved performance	45 (75%)	10 (17%)	5 (8%)
Felt feedback caused goal-setting	43 (72%)	4 (7%)	13 (22%)

Eighty percent ($N = 48$) of participants self-reported that they set performance-related goals. Table 10 displays a summary of participant responses obtained from items on the post-study questionnaire with regard to the types of performance goals set.

Table 10

Participant Comments: Performance Goals

Type of Goal	<i>N</i>	<i>Percent</i>
Overall quantity	30	63%
Increased quantity based on previous session	7	15%
Accuracy	6	13%
Rate	2	4%
Remain on task for a pre-determined amount of time	2	4%
Not Specified	1	2%

DISCUSSION

The results of the present study suggest three main conclusions regarding feedback solicitation. First, participants who were paid individual monetary incentives did not self-solicit feedback more often than those who were paid an hourly wage. Second, the frequency of feedback solicitation did increase as time to the end of the session approached for individuals paid monetary incentives; a clear trend in feedback solicitation across time was not observed for those paid hourly. Third, feedback solicitation was not related to differences in individual levels of competition with one's self or competition with others. Given that findings regarding the relationship between competition and performance contradicted previous results (Hinsz & Jundt, 2005; Ward, 2005) and were primarily of exploratory interest, the following discussion will focus only on the frequency of feedback solicitation and task performance under the two pay conditions.

Regarding task performance, two main conclusions can be made from the results of this study. First, task performance differed significantly between the two pay groups. Specifically, participants completed more checks correctly when they were paid individual monetary incentives. Second, task performance was not associated with feedback solicitation. That is, individuals who self-solicited performance feedback did not complete significantly more correct checks than those who did not solicit feedback.

The above results, together with the primary analysis that indicated that the frequency of feedback solicitation was comparable when individuals were paid monetary incentives and hourly wages, imply that monetary incentives did not increase the reinforcing value of self-solicited feedback in comparison to hourly pay. That is, the fact

that the frequency of feedback solicitation did not differ when individuals were paid monetary incentives or hourly pay suggests that this type of feedback did not become more valuable due to its link with the amount of pay individuals earned. This was true even though participants performed significantly better when paid incentives, indicating that the individual monetary incentives were functional rewards. The relatively high rates of feedback solicitation across both pay groups do, however, imply that performance feedback is valuable to performers regardless of whether it informs them how much money they will earn.

As noted earlier, self-solicitation of feedback was not related to improved task performance. This result contradicts those of two previous studies that examined the effects of self-generated and computer-mediated feedback on performance. Both found a positive association between those types of feedback and performance (Earley, 1988; Northcraft & Earley, 1989). Methodological differences may account for the contradictory results in the present study. Differences relate to (a) the availability/frequency of feedback, (b) the response effort associated with obtaining feedback, and (c) the association of feedback with performance goals.

In this study, performance feedback was continuously available to participants via an EPM system and could be displayed with the simple click of a computer mouse. That is, at any time during the experimental sessions participants could solicit feedback from the computer program by clicking on the "Feedback" button. Additionally, feedback was not associated with assigned performance goals in the present study. In the aforementioned studies by Earley (1988) and Northcraft and Earley (1989), (a) computer-mediated feedback was available only once at the end of each work day or at the

beginning of each session, (b) individuals self-generated performance feedback using performance data collected by a computer, and (c) feedback was associated with performance goals (e.g., process a particular number of magazine subscriptions, increase the value of a stock portfolio).

The inclusion of performance goals would appear to be the factor mostly likely to contribute to the differential results found between the present study and those mentioned above. Assigned performance goals were absent in this study; however, results of the self-report data collected from participant questionnaires revealed that 80% ($N = 48$) of participants engaged in self-generated goal setting. The distinction between assigned and self-generated goals is important with regard to the interpretation of the results of the present study. Assigned performance goals imply some element of evaluation from an outside source (i.e., assigned goals contain an evaluative component). In addition, assigned goals imply, based on the behavioral histories of most individuals, that behavior that leads to goal attainment will be followed by a positive consequence (e.g., praise/reward), and behavior that fails to result in goal attainment will be followed by a negative consequence (e.g., criticism). In contrast, self-generated goals do not have any implication for how well a person is performing. For example, an individual could self generate a goal that is much lower than normative or average performance. Thus, although most participants in this study generated goals for themselves, those goals would not be considered assigned goals and would not imply evaluation.

The function of self-generated goal setting, as it relates to the results of the current study, is unknown. The self-generated goals could have influenced performance and may account for the undifferentiated performance between the two pay groups.

Therefore, given that the majority of participants engaged in self-generated goal setting, the extent to which self-solicitation of feedback is related to self-generated goal setting should be examined. Furthermore, studies should investigate whether self-solicitation of feedback engenders more goal setting than feedback provided by other sources, such as a supervisor. Self-solicitation of feedback may increase the frequency of self-generated goal setting because individuals have the option to solicit performance feedback more often and more immediately from a computer source than may be possible from a supervisor or alternative source.

A few studies have suggested that feedback may need to have an evaluative component (e.g., praise/criticism) in order to affect performance (Brown, Willis, Reid, 1981; Crowell, Anderson, Abel, & Sergio, 1988). However, the computer-generated feedback received by individuals in the Earley (1988) and Northcraft and Early (1989) studies was purposely not paired with praise, criticism, or other evaluative statements. Earley suggests the perceived evaluative component associated supervisor-provided feedback may decrease performance for individuals who are concerned about external evaluation; thus, because a computer is not (typically) an evaluative source, performance of individuals sensitive to evaluation may be higher when they receive feedback from a non-evaluative source. From a behavioral viewpoint, Earley's explanation suggests that individuals who have been criticized or punished for not performing well (as is often the case in a typical business setting) would be more likely to prefer computer-generated feedback. In addition, Northcraft and Earley found that self-generated feedback (with and without the use of a computer) was perceived as more trustworthy and useful than feedback provided by a supervisor or by the organization.

The results of the present study are similar to those found by Johnson et al. (2008), providing additional evidence that objective feedback does not enhance performance, regardless of whether the feedback is paired with hourly pay or individual monetary incentive pay. Feedback was not associated with assigned goals in either study, suggesting again that an evaluative component may be necessary to enhance performance. Although praise and/or criticism are common evaluative components, assigned goals in combination with specific performance feedback in relation to those goals may be another example of an evaluative component that enables self-evaluation of performance. This contention is supported by Earley's (1988) finding that individuals who received specific feedback achieved higher levels of performance; individuals were able to use the specific feedback in order to adjust their performance. Results of the present study, along with those of Earley, support the proposal by Johnson et al. that feedback may not be effective unless some type of evaluation is implied or explicitly provided along with it.

Research has not examined the effects of evaluative feedback delivered by a computer. As mentioned earlier, the form of self-solicited feedback available to participants via the computer program in the current study was objective feedback and did not contain any type of evaluation. Future research should examine self-solicited feedback (available from a computer) when combined with some type of evaluative component that informs performers how well they are doing in comparison to an objective standard or in comparison to others. Again, this lack of an evaluative component (i.e., assigned goals which imply evaluation) may account for why the results

of this study differed from the results of previous studies (Earley, 1988; Northcraft & Earley, 1989).

Although the frequency of feedback solicitation was not significantly different between the two pay groups, a difference in the patterns of self-solicitation across time was observed. As mentioned earlier, feedback solicitation increased as time to the end of the session approached for individuals paid monetary incentives; the frequency of feedback solicitation was variable across session intervals for participants paid hourly. From a behavioral perspective, one possible explanation for this difference is that the reinforcing effectiveness of self-solicited feedback might have changed over time for individuals paid incentives. Since the number of correctly completed checks was directly related to the amount of money earned, the effect of solicited feedback (indicating high or low numbers) could have varied depending on the amount of time left in the session. For example, self-solicited feedback may have been a weak reinforcer (or possibly even a punisher) at the start of the experimental sessions because the feedback would have indicated low levels of performance associated with a small amount of money earned. However, toward the end of the session (e.g., during the last 15 minutes), the solicited feedback was more likely to indicate a higher number of correctly completed checks. Thus, in this case, the feedback was associated with a larger amount of money earned and may have been a stronger conditioned reinforcer, yet still not sufficiently strong to influence the number of correctly completed checks.

There are some limitations to generality of the results obtained in this study. The most obvious is the fact that this was a laboratory simulation versus an applied study; thus, generality to actual work settings is limited. Additionally, although the use of EPM

systems is becoming a common method for delivering performance feedback (Mallo et al., 2007), providing computer-delivered feedback is not currently representative of how feedback is typically provided in the work place. Typically, feedback is delivered by another individual (e.g., supervisor) and is paired with some degree of evaluation. Moreover, delivering feedback via an EPM system would not be possible for all job tasks, since many do not permit measurement by a computer-tracking mechanism.

Another limitation concerns the fact that participants in the monetary incentive condition were unable to engage in the experimental task while looking at performance feedback. It is possible that this procedural deficit both suppressed and punished feedback solicitation for some participants. In fact, four of the participants who did not engage in feedback solicitation reported that the reason they didn't was because they did not want to "waste time" or "lose money." Overall, larger frequencies of feedback solicitation might also have been seen for this group if feedback solicitation was not associated with loss of time to earn incentive pay. Future studies should attempt to extend the length of the session for participants working for monetary incentives according to the amount of time participants looked at feedback.

Despite the aforementioned limitations, this study is important because of its foundational nature; that is, the present study was the first to attempt to identify variables which may influence feedback solicitation beyond feedback source (e.g., Kluger & Adler, 1989). As mentioned in the introduction, identifying conditions under which feedback solicitation occurs would allow researchers to identify the function of this form of feedback (theoretical advantage), as well as allow organizations to set up effective EPM feedback systems (applied advantage).

In addition, the current study provided a direct measure which enabled the detection of when individuals attended to or came in contact with performance feedback. Previous studies (e.g., Bucklin et al., 2003; Johnson et al., 2008) did not assess whether individuals actually saw the feedback which was provided to them. Whereas individuals in the present study had to make an *active* response in order to view performance feedback, individuals in the Johnson et al. and Bucklin et al. studies were simply given the opportunity to view feedback that was provided to them on the computer screen (i.e., a *passive* response). The detection procedure used in the present study will allow for future assessments of additional conditions under which individuals might self-solicit feedback, which may or may not enhance performance.

As indicated in the *Results* section, strong relationships were found between task performance (i.e., number of correctly completed checks) and both the rate of correctly completed checks (speed of performance) and the time spent on-task. Specifically, individuals who worked at higher rates and spent more time engaged in the experimental task performed better. In addition, while the percentage of correctly completed checks (i.e., accuracy) was not significantly correlated with the number of correctly completed checks, accuracy was not negatively affected by better performance. However, it should be noted that the receipt of monetary incentives was contingent upon quality (i.e., correctly completed checks). The preceding results are almost identical to those of other incentive studies using the same experimental task (Johnson, 2005; McGee et al., 2007). Thus, these results lend additional support for the contention that individual monetary incentives improve performance with the type of rate-oriented task used in these studies because performers spend more time working and/or work faster.

Given the current results and associated implications, several possibilities for future research exist. The most obvious extension of the present study would examine frequency of feedback solicitation, with and without an evaluative component, under hourly pay and individual monetary pay conditions. Then, if a difference was found (i.e., evaluative component makes feedback more valuable), it would be appropriate to assess effects on performance and whether frequency of feedback solicitation differs under hourly versus incentive pay conditions when evaluative feedback is delivered by a supervisor/experimenter or self-solicited from a computer.

The initial study would allow for the examination of whether the availability of an evaluative component influences frequency of feedback solicitation. The second study would focus on the effects of different sources of evaluative feedback on performance. An additional phase could be added to the second study to set up a choice component; once individuals have been exposed to both sources of evaluative feedback, they could be given the choice to work under either condition (i.e., self-solicited evaluative feedback or supervisor-delivered evaluative feedback).

As indicated earlier, this study was one of the first attempts to utilize procedures to enable detection of whether individuals came into contact with feedback provided by a computer by requiring participants to make a response to obtain that feedback. In addition, this study was the first to examine conditions under which feedback solicitation will occur and conditions that may increase the frequency of feedback solicitation. Although the current results demonstrated no difference in the frequency of self-solicited feedback between individuals paid hourly versus those paid incentives, these results do provide support for the contention that feedback may not be effective unless paired with

an evaluative component, such as praise, criticism, or assigned goals. Thus, this study provides a foundation for future research to examine other factors that may influence self-solicited feedback, as well as factors that may enhance the effectiveness of this type of feedback.

REFERENCES

- Alvero, A. M., Bucklin, B. R., & Austin, J. (2001). An objective review of the effectiveness and essential characteristics of performance feedback in organizational settings. *Journal of Organizational Behavior Management*, 21(1), 3-29.
- Balcazar, F. E., Hopkins, B., & Suarez, Y. (1985-86). A critical objective review of performance feedback. *Journal of Organizational Behavior Management*, 7(3/4), 65-89.
- Balcazar, F. E., Shupert, M. K., Daniels, A. C., Mawhinney, T. C., & Hopkins, B. L. (1989). An objective review and analysis of ten years of publication in the *Journal of Organizational Behavior Management*. *Journal of Organizational Behavior Management*, 10(1), 7-37.
- Bandura, A., & Cervone, D. (1983). Self-evaluative and self-efficacy mechanisms governing the motivational effects of goal systems. *Journal of Personality and Social Psychology*, 45, 1017-1028.
- Barrick, M. R., & Mount, M. K. (1991). The big five personality dimensions and job performance: A meta-analysis. *Personnel Psychology*, 44, 1-26.
- Brown, K. M., Willis, B. S., & Reid, D. H. (1981). Differential effects of supervisor verbal feedback and feedback plus approval on institutional staff performance. *Journal of Organizational Behavior Management*, 3(1), 57-68.
- Bucklin, B. R., Alvero, A. M., Dickinson, A. M., Austin, J., & Jackson, A. K. (2000). Industrial-organizational psychology and organizational behavior management:

- An objective comparison. *Journal of Organizational Behavior Management*, 20(2), 27-75.
- Bucklin, B. R., & Dickinson, A. M. (2001). Individual monetary incentives: A review of different types of arrangements between performance and pay. *Journal of Organizational Behavior Management*, 21(3), 45-137.
- Bucklin, B. R., McGee, H. M., & Dickinson, A. M. (2003). The effects of individual monetary incentives with and without feedback. *Journal of Organizational Behavior Management*, 23(2/3), 65-94.
- Crowell, C. R., Anderson, D. C., Abel, D. M., & Sergio, J. P. (1988). Task clarification, performance feedback, and social praise: Procedures for improving the customer service of bank tellers. *Journal of Applied Behavior Analysis*, 21, 65-71.
- Daniels, A. C. (2000). *Bringing out the best in people: How to apply the astonishing power of positive reinforcement*. New York: McGraw-Hill.
- Dickinson, A. M., & Gillette, K. L. (1993). A comparison of the effects of two individual monetary incentive systems on productivity: Piece rate pay versus base pay plus incentives. *Journal of Organizational Behavior Management*, 14(1), 3-82.
- Dinsmoor, J. A., Browne, M. P., & Lawrence, C. E. (1972). A test of the negative discriminative stimulus as a reinforcer of observing. *Journal of the Experimental Analysis of Behavior*, 18, 79-85.
- Duncan, P. K., & Bruwelheide, L. R. (1985-86). Feedback: Use and possible behavioral functions. *Journal of Organizational Behavior Management*, 7(3/4), 91-114.

- Earley, P. C. (1988). Computer-generated performance feedback in the magazine-subscription industry. *Organizational Behavior and Human Decision Processes*, 41, 50-64.
- Fante, R. F., & Slowiak, J. M. (2007). *Observing behavior of non-humans and humans: A literature review*. Unpublished manuscript, Western Michigan University, Kalamazoo, Michigan.
- Fantino, E. (1977). Conditioned reinforcement: Choice and information. In W. K. Honig, & J. E. R. Staddon (Eds.), *Handbook of operant behavior* (pp. 313-339). Englewood Cliffs, NJ: Prentice-Hall.
- Greller, M. M. (1980). Evaluation of feedback sources as a function of role and organizational level. *Journal of Applied Psychology*, 65, 24-27.
- Greller, M. M., & Herold, P. M. (1975). Sources of feedback: A preliminary investigation. *Organizational Behavior and Human Decision Processes*, 13, 244-256.
- Heggestad, E. D., & Kanfer, R. (2000). Individual differences in trait motivation: Development of the Motivational Trait Questionnaire. *International Journal of Educational Research*, 33, 751-776.
- Helmreich, R. L., & Spence, J. T. (1978). Work and Family Orientation Questionnaire: An objective instrument to assess components of achievement motivation and attitudes towards family and career. *JSAS Catalog of Selected Documents in Psychology*, 8, 35.

- Hinsz, V. B., & Jundt, D. K. (2005). Exploring individual differences in a goal-setting situation using the Motivational Trait Questionnaire. *Journal of Applied Social Psychology, 35*(3), 551-571.
- Houston, J. M., Farese, D. M., & La Du, T. J. (1992). Assessing competitiveness: A validation study of the Competitiveness Index. *Personality and Individual Differences, 13*(10), 1153-1156.
- Hwang H., & Dickinson, A. M. (2007, May). *The relative effects of individual and social comparison feedback when individuals earn monetary incentives*. Presented at the annual conference of the Association for Behavior Analysis, San Diego, CA.
- Ilgen, D. R., Fisher, C. D., & Taylor, M. S. (1979). Consequences of individual feedback on behavior in organizations. *Journal of Applied Psychology, 64*, 349-371.
- Jenkins, C. D., Zyzanski, S. J., & Rosenman, R. H. (1979). *Jenkins Activity Survey*. New York: The Psychological Corporation.
- Jenkins, G. D., Gupta, N., Mitra, A., & Shaw, J. D. (1998). Are financial incentives related to performance? A meta-analytic review of empirical research. *Journal of Applied Psychology, 83*, 777-787.
- Jenkins, H. M., & Boakes, R. A. (1973). Observing stimulus sources that signal food or no food. *Journal of the Experimental Analysis of Behavior, 20*, 197-207.
- Johnson, D. A. (2005). *The effects of feedback on hourly pay and individual monetary incentives*. Unpublished master's thesis, Western Michigan University, Kalamazoo, Michigan.

- Johnson, D. A., Dickinson, A. M., & Huitema, B. E. (2008). The effects of objective feedback when individuals receive fixed and individual incentive pay. *Performance Improvement Quarterly*, 20(3-4), 53-74.
- Kanfer, R., & Ackerman, P. L. (2000). Individual differences in motivation: Further explorations of a trait framework. *Applied Psychology: An International Review*, 49, 470-482.
- Kanfer, R., & Heggestad, E. D. (1997). Motivational traits and skills: A person-centered approach to work motivation. *Research in Organizational Behavior*, 19, 1-56.
- Kelleher, R. T., & Gollub, L. R. (1962). A review of positive conditioned reinforcement. *Journal of the Experimental Analysis of Behavior*, 5, 543-597.
- Kendall, S. B. (1973). Redundant information in an observing response procedure. *Journal of the Experimental Analysis of Behavior*, 19, 81-92.
- Kildea, A. E. (1983). Competition: A model for conception. *Quest*, 35, 169-181.
- Kluger, A. N., & Adler, S. (1993). Person- versus computer-mediated feedback. *Computers in Human Behavior*, 9, 1-16.
- Kluger, A. N., & DeNisi, A. (1996). The effects of feedback interventions on performance: A historical review, a meta-analysis, and a preliminary feedback intervention theory. *Psychological Bulletin*, 119(2), 254-284.
- Kohn, A. (1986). *No contest*. Boston, MA: Houghton Mifflin.
- Kopelman, R. E. (1986). Objective feedback. In E. A. Locke (Ed.), *Generalizing from laboratory to field settings* (pp. 119-145). Lexington, MA: Lexington Books.
- Ledford, G. E. Jr., Lawler, E. E. III, & Mohrman, S. A. (1995). Reward innovations in Fortune 1000 companies. *Compensation and Benefits Review*, 27, 76-80.

- Lieberman, D. A., Cathro, J. S., Nichol, K., & Watson, E. (1997). The role of S- in human observing behavior: Bad news is sometimes better than no news. *Learning and Motivation, 28*, 20-42.
- Mallo, J., Nordstrom, C. R., Bartels, L. K., & Traxler, A. (2007). Electronic performance monitoring: The effect of age and task difficulty. *Performance Improvement Quarterly, 20*(1), 49-64.
- Matthews, G. A., & Dickinson, A. M. (2000). Effects of alternative activities on productivity under different percentages of incentive pay. *Journal of Organizational Behavior Management, 20*(1), 3-27.
- Mawhinney, T. C. (1975). Operant terms and concepts in the description of individual work behavior: Some problems of interpretation, application and evaluation. *Journal of Applied Psychology, 60*, 704-712.
- McGee, H. M., Dickinson, A. M., Huitema, B. E., & Culig, K. M. (2007). The effects of individual and group monetary incentives on high performance. *Performance Improvement Quarterly, 19*(4), 101-124.
- Mulvaney, D. E., Dinsmoor, J. A., Jwaideh, A. R., & Hughes, L. H. (1974). Punishment of observing by the negative discriminative stimulus. *Journal of the Experimental Analysis of Behavior, 21*, 37-44.
- Nolan, T. V., Jarema, K. A., & Austin, J. (1999). An objective review of the *Journal of Organizational Behavior Management: 1987-1997*. *Journal of Organizational Behavior Management, 19*(3), 83-114.
- Northcraft, G. B., & Earley, P. C. (1989). Technology, credibility, and feedback use. *Organizational Behavior and Human Decision Processes, 44*, 83-96.

Peck, C. (1990). *Variable pay: New performance rewards* (Research Bulletin No. 246).

The Conference Board.

Peterson, N. (1982). Feedback is not a new principle of behavior. *The Behavior Analyst*, 5, 101-102.

Pierce, W. D., & Cheney, C. D. (2004). *Behavior analysis and learning* (3rd ed.).

Mahwah, NJ: Lawrence Erlbaum Associates.

Prue, D. M., & Fairbank, J. A. (1981). Performance feedback in organizational behavior management: A review. *Journal of Organizational Behavior Management*, 3(1), 1-16.

Rosenthal, M. B., Landon, B. E., Normand, S. L., Frank, R. G., & Epstein, A. M. (2006).

Pay for performance in commercial HMOs. *The New England Journal of Medicine*, 355, 1895-1902.

Schleifer, L. M., & Shell, R. L. (1992). A review and reappraisal of electronic performance monitoring, performance standards and stress allowances. *Applied Ergonomics*, 23, 49-53.

Schmitt, D. R. (1986). Competition: Some behavioral issues. *The Behavior Analyst*, 9, 27-34.

Shadish, W. R., Cook, T. D., & Campbell, D. T. (2002). *Experimental and quasi-experimental designs for generalized causal inference*. Boston, MA: Houghton Mifflin Company.

Skinner, B. F. (1953). *Science and human behavior*. New York: Macmillan.

- Smith, M. J., Carayon, P., Sanders, K. J., Lim, S. Y., & LeGrande, D. (1992). Employee stress and health complaints in jobs with and without electronic performance monitoring. *Applied Ergonomics*, 23, 17-27.
- Smither, R. D., & Houston, J. M. (1992). The nature of competitiveness: The development and validation of the Competitiveness Index. *Educational and Psychological Measurement*, 52, 407-418.
- Steers, R. M. (1975). Task-goal attributes, achievement, and supervisory performance. *Organizational Behavior and Human Performance*, 13, 392-403.
- Sulzer-Azaroff, B., & Mayer, R. G. (1991). *Behavior analysis for lasting change*. Fort Worth, TX: Wadsworth.
- Tomanari, G. Y. (2004). Human observing behavior maintained by S+ and S-: Preliminary data. *International Journal of Psychology and Psychological Therapy*, 4, 155-163.
- Ward, N. J. R. (2005). Affect, disposition, and cognition in motivation: Linking them back together. *Dissertation Abstracts International: Section B: The Sciences and Engineering*, 66(4-B), 2332.
- Wyckoff, L. B., Jr. (1952). The role of observing responses in discrimination learning: Part 1. *Psychological Review*, 59, 431-442.
- Wyckoff, L. B., Jr. (1969). The role of observing responses in discrimination learning. In D. P. Hendry (Ed.), *Conditioned reinforcement* (pp. 237-260). Homewood, IL: Dorsey Press.

Appendix A
Recruitment Script

Recruitment Script (In-Class Announcement)

Hello. My name is Julie Slowiak, and I am a doctoral student in psychology at Western Michigan University. I am looking for individuals to participate in a study designed to evaluate how well individuals perform a data entry task under different conditions. The data entry task simulates the job of a bank proof operator and consists of entering numbers using the numeric keypad on a computer. Computer games will also be available during the sessions if individuals want to play them. The study will be conducted in Wood Hall on WMU's campus.

If you are currently enrolled in or have completed PSY 3440, Organizational Psychology PSY 4440, Industrial/Organizational Behavior Analysis or PSY 4600, Survey of Behavior Analysis Research, you are not eligible to participate because what you learned in those classes could influence your performance. In addition, you must play computer games at least one hour per week to be eligible to participate.

Sessions will be 45 minutes and you will be asked to attend 5 sessions over a 2-week period. The amount of money you will earn will depend upon the conditions in the study, but it is likely that you will earn from \$4.00 to \$8.00 per session.

Your participation is completely voluntary and you may withdraw at any time. If you do withdraw, you will be paid the money you have earned up to that point. Your willingness to participate in the study or your withdrawal from the study at a later time will not affect your grade in this or any other class.

If you would like to learn more about this study, please print your name, phone number or email address, whichever is most convenient for you, on a sheet of paper and give it to me. I am also handing out a sheet of paper with my name and email address, and you can contact me by email if you prefer.

I will contact you within the next few days to arrange a time when we can meet to discuss the details of the study.

Thank you!

Appendix B
Recruitment Flyer

[illegible]

Appendix C
Screening Questionnaire

Screening Questionnaire

Participant Number: _____

Please complete the following questions. All information you provide will remain confidential.

1. Have you taken, or are currently taking, either of the following classes?

PSY 3440, Organizational Psychology	___ Yes	___ No
PSY 4440, Industrial/Organizational Behavior Analysis	___ Yes	___ No
PSY 4600, Survey of Behavior Analysis Research	___ Yes	___ No

2. Do you play any of the following computer games?

FreeCell	___ Yes	___ No
Hearts	___ Yes	___ No
Minesweeper	___ Yes	___ No
Pinball	___ Yes	___ No
Solitaire	___ Yes	___ No
Spider Solitaire	___ Yes	___ No
Tetris	___ Yes	___ No

3. If you play any of the games listed above, how often do you play?

1 2 3 4 5 6 7 8 9 times a day

1 2 3 4 5 6 7 days a week

1 2 3 4 times a month

4. On average, how many hours a week do you play computer games?

Less than 1 2 3 4 5 6 7 8 9 10 10+ hours

5. Do you know anyone that has signed up to participate in the study? If so, please list their names.

Thank you!

Appendix D
Pay System Quizzes

Pay System Quiz

Participant Number: _____

PAY SYSTEM:

Individuals are paid \$.007 for every check correctly processed during the session.

Answer the following questions based on the pay system.

1. Dan correctly processed 1150 checks during a session. How much money did Dan earn for that session?

2. Mary correctly processed 220 checks during a session. How much money did Mary earn for that session?

3. Billy correctly processed 730 checks during a session. How much money did Billy earn for that session?

Pay System Quiz

Participant Number: _____

PAY SYSTEM:

Individuals are paid \$5.75 per session.

Answer the following questions based on the pay system.

1. Dan correctly processed 1150 checks during a session. How much money did Dan earn for that session?
2. Mary correctly processed 220 checks during a session. How much money did Mary earn for that session?
3. Billy correctly processed 730 checks during a session. How much money did Billy earn for that session?

Appendix E
Informed Consent Documents

WESTERN MICHIGAN UNIVERSITY
H. S. I. R. B.
Approved for use for one year from this date:

AUG 13 2007

HSIRB Chair

Western Michigan University
Department of Psychology

The Effects of Pay on the Performance of a Data Entry Task

Principal Investigator: Alyce M. Dickinson, Ph.D.

Student Investigator: Julie M. Slowiak, M.A.

I have been invited to participate in a research study designed to determine the effects of hourly pay on the performance of a data entry task. The study is Julie Slowiak's dissertation project. Dr. Alyce Dickinson is her advisor.

Eligibility requirements. In order to be eligible to participate in this study, I must play computer games at least one hour per week and must not be enrolled in or have completed either PSY 3440: Organizational Psychology, PSY 4440: Industrial/Organizational Behavior Analysis, or PSY 4600: Survey of Behavior Analysis Research. I also must pass a quiz that tests my understanding of the pay system after it has been explained to me, and be able to attend four 45-minute sessions in a two-week period of time.

Explanation of study procedures and length of participation. I will perform a computerized data entry task. Simulated bank checks will be displayed on the computer screen, and I will type the numeric amounts of the checks using the computer keyboard. Each session will be 45 minutes, and I will attend 4 sessions over a 2-week period.

Payment. I will receive \$5.75 for today's introductory session. I will also be paid \$5.75 for attending a session during which my keyboard skills will be assessed, and \$5.75 for attending each of the next 3 experimental sessions. If I decide that I do not want to continue my participation after today's session or do not meet all of the participation requirements, I will be paid \$5.75 for attending today's introductory session before I leave. If I agree to participate and meet the participation requirements, I will receive payment for all sessions when the entire study has been completed. If I decide to withdraw from the study before it is over, I will be paid the amount of money that I earned for the sessions I attended.

Risks. I may experience some physical discomfort, minor fatigue, or stress when I am performing the data entry task. This will be offset because I will be able to take breaks whenever I want to during the session. When I take a break, I may play computer games that are on the computer or simply relax.

Benefits. I may learn about research regarding the effects of pay on work performance. The data obtained from this study will help determine how pay systems affect the performance of individuals. This knowledge may allow businesses to design better pay systems.

WESTERN MICHIGAN UNIVERSITY
H. S. I. R. B.
Approved for use for one year from this date:

AUG 13 2007

HSIAB Chair

Confidentiality. All information obtained in this study will remain strictly confidential. When results of the study are presented publicly, I will not be identified. I will be assigned a number and that number will be used to identify my data.

Voluntary participation. My participation in this study is completely voluntary. I may withdraw at any time without penalty. If I do withdraw, I will receive the money I earned for the sessions I attended. My participation in the study, or my withdrawal from the study, will not affect my grades in any of my courses. At the end of the study, the experimenter will answer any questions I have and explain how my data will help to learn more about pay systems.

Who to contact if I have questions. If I have any questions about this study, I may contact Julie Slowiak at julie.slowiak@wmich.edu. I may also call Julie's faculty advisor, Dr. Dickinson, at 269-387-4473. In addition, I can also call the chair of Western Michigan University's Human Subjects Review Board at 269-387-8293, or the Vice President for Research at 269-387-8298, if questions or problems arise during the course of the study.

This consent document has been approved for use for one year by the Human Subjects Institutional Review Board as indicated by the stamped date and signature of the Board Chair in the upper right hand corner. Participants should not sign this document if the corner does not have a stamped date and signature.

My signature below indicates that I have read the above information and agree to participate in this study.

Participant Signature: _____ Date: _____

Please keep the attached copy of this form for your records.

WESTERN MICHIGAN UNIVERSITY
H. S. I. R. B.
Approved for use for one year from this date:

AUG 13 2007

HSIRB Chair

Western Michigan University
Department of Psychology

The Effects of Pay on the Performance of a Data Entry Task

Principal Investigator: Alyce M. Dickinson, Ph.D.

Student Investigator: Julie M. Slowiak, M.A.

I have been invited to participate in a research study designed to determine the effects of individual monetary incentive pay on the performance of a data entry task. The study is Julie Slowiak's dissertation project. Dr. Alyce Dickinson is her advisor.

Eligibility requirements. In order to be eligible to participate in this study, I must play computer games at least one hour per week and must not be enrolled in or have completed either PSY 3440: Organizational Psychology, PSY 4440: Industrial/Organizational Behavior Analysis, or PSY 4600: Survey of Behavior Analysis Research. I also must pass a quiz that tests my understanding of the pay system after it has been explained to me, and be able to attend four 45-minute sessions in a two-week period of time.

Explanation of study procedures and length of participation. I will perform a computerized data entry task. Simulated bank checks will be displayed on the computer screen, and I will type the numeric amounts of the checks using the computer keyboard. Each session will be 45 minutes, and I will attend 4 sessions over a 2-week period.

Payment. I will receive \$5.75 for today's introductory session. I will also be paid \$5.75 for attending a session during which my keyboard skills will be assessed. During the 3 experimental sessions, I will earn incentives based on my performance of the data entry task. It is likely that I will earn between \$4.00 and \$8.00 per session, but the exact amount will depend upon my performance of the task. For every correctly processed check, I will earn \$0.007. If I decide that I do not want to continue my participation after today's session or do not meet all of the participation requirements, I will be paid \$5.75 for attending today's introductory session before I leave. If I agree to participate and meet the participation requirements, I will receive payment for all sessions when the entire study has been completed. If I decide to withdraw from the study before it is over, I will be paid the amount of money that I earned for the sessions I attended.

Risks. I may experience some physical discomfort, minor fatigue, or stress when I am performing the data entry task. This will be offset because I will be able to take breaks whenever I want to during the session. When I take a break, I may play computer games that are on the computer or simply relax.

WESTERN MICHIGAN UNIVERSITY
H. S. I. R. B.
Approved for use for one year from this date:

AUG 13 2007

HSIRB Chair

Benefits. I may learn about research regarding the effects of pay on work performance. The data obtained from this study will help determine how pay systems affect the performance of individuals. This knowledge may allow businesses to design better pay systems.

Confidentiality. All information obtained in this study will remain strictly confidential. When results of the study are presented publicly, I will not be identified. I will be assigned a number and that number will be used to identify my data.

Voluntary participation. My participation in this study is completely voluntary. I may withdraw at any time without penalty. If I do withdraw, I will receive the money I earned for the sessions I attended. My participation in the study, or my withdrawal from the study, will not affect my grades in any of my courses. At the end of the study, the experimenter will answer any questions I have and explain how my data will help to learn more about pay systems.

Who to contact if I have questions. If I have any questions about this study, I may contact Julie Slowiak at julie.slowiak@wmich.edu. I may also call Julie's faculty advisor, Dr. Dickinson, at 269-387-4473. In addition, I can also call the chair of Western Michigan University's Human Subjects Review Board at 269-387-8293, or the Vice President for Research at 269-387-8298, if questions or problems arise during the course of the study.

This consent document has been approved for use for one year by the Human Subjects Institutional Review Board as indicated by the stamped date and signature of the Board Chair in the upper right hand corner. Participants should not sign this document if the corner does not have a stamped date and signature.

My signature below indicates that I have read the above information and agree to participate in this study.

Participant Signature: _____ Date: _____

Please keep the attached copy of this form for your records.

Appendix F

Western Michigan University HSIRB Approval Letter

WESTERN MICHIGAN UNIVERSITY

Human Subjects Institutional Review Board

Date: August 13, 2007

To: Alyce Dickinson, Principal Investigator
Julie Slowiak, Student Investigator for dissertation

From: Amy Naugle, Ph.D., Chair

A handwritten signature of Amy Naugle in black ink, written over the printed name.

Re: HSIRB Project Number: 07-07-23

This letter will serve as confirmation that your research project entitled "Self-Solicited Feedback: Effects of Hourly Pay and Individual Monetary Incentive Pay" has been **approved** under the **expedited** category of review by the Human Subjects Institutional Review Board. The conditions and duration of this approval are specified in the Policies of Western Michigan University. You may now begin to implement the research as described in the application.

Please note that you may **only** conduct this research exactly in the form it was approved. You must seek specific board approval for any changes in this project. You must also seek reapproval if the project extends beyond the termination date noted below. In addition if there are any unanticipated adverse reactions or unanticipated events associated with the conduct of this research, you should immediately suspend the project and contact the Chair of the HSIRB for consultation.

The Board wishes you success in the pursuit of your research goals.

Approval Termination: August 13, 2008

Walwood Hall, Kalamazoo, MI 49008-5456
PHONE: (269) 387-8293 FAX: (269) 387-8276

Appendix G

MTQ Participant Instructions and Sample Items

Self-Description Questionnaire

INSTRUCTIONS:

This questionnaire asks you to respond to statements about your attitudes, opinions, and behaviors. Read each statement carefully, and decide whether or not the statement describes you. Using the scale at the top of each page indicate the degree to which the **ENTIRE** statement is true of you. Give only one answer for each statement.

Some of the statements may refer to experiences you may not have had. Respond to these statements in terms of how true you think it **WOULD BE** of you.

Look at the sample statement below.

SAMPLE STATEMENT:

1 ◆	2 ◆	3 ◆	4 ◆	5 ◆	6 ◆
Very UNTRUE of Me	UNTRUE of Me	Somewhat UNTRUE of Me	Somewhat TRUE of Me	TRUE of Me	Very TRUE of Me

I like to go to parties.

MARK 1 → *if you really dislike parties and you try to avoid them.*

 2 → *if you generally dislike parties and only go when you have to.*

 3 → *if you think parties are okay but generally prefer not to go.*

 4 → *if you think parties are okay and generally prefer to go.*

 5 → *if you generally like parties and go to most of the time.*

 6 → *if you really like parties and only miss one if you absolutely have to.*

PLEASE NOTE:

- There are no right or wrong answers. Simply describe yourself honestly and state your opinions accurately.
- In deciding on your answer, consider your life in general and not only the last few weeks or months.
- Deciding on an answer may be difficult for some of the statements. If you have a hard time deciding, choose the answer that is **MOST** true of you.
- Some of the items will seem repetitive. These are not meant to be trick questions. Do not look back at your previous answers, simply answer each question honestly.

DO NOT TURN TO THE NEXT PAGE UNTIL YOU ARE TOLD TO DO SO

Larger sample of MTQ items:

1. When I become interested a task, I try to learn as much about it as I can.
2. I like to take on task assignments that challenge me.
3. If I already do something well, I don't see the need to challenge myself to do better.
4. I strive to do my job better than the people I work with.
5. It is important for me to outperform my co-workers.
6. I compare my performance to that of others.
7. I try to avoid competitive situations.
8. Even in non-competitive situations, I find ways to compete with others.
9. When working on important tasks, I get concerned that I will make a mistake.
10. I worry about the possibility of failure or poor performance.
11. My heart beats fast before I begin difficult tasks.
12. I am able to remain calm and relaxed in stressful situations.

Appendix H

Screen Shot of Check Program

Check Verify Software

File Edit View Options Help

File Edit View Options Help

Feedback Exit Program

John Doe

Pay to the order of James Long \$ 211.34

Two hundred eleven and 34/100 ***** Dollars

Memo John Doe

[: 00067894 :] 12312120312 311

Enter the amount in the check shown above:

Enter only numbers and decimal (example 150.77)

Next Check >>

Appendix I
Post-Session Data Recording Form

Data Recording Form

Participant Number: _____

Pay Condition: Hourly / Incentive

C1	C2	C3	C4	C5	C6	C7	C8	C9	C10
Date	Session	# of Times "Feedback" Button Pressed	Time off Task (s/60=min)	Time on Task (45- C4)	Total # Checks Complete	# Checks Correct	% Correct (C7/C6)	Rate (C6/C5)	Amt Earned
	Intro								
	Pre-test								
	Exp 1								
	Exp 2								
	Exp 3								
Total Amount Earned									

Directions for calculating amounts for C10: Amount Earned

(1) Introductory session: all participants earn \$5.75

(2) Pre-test session: all participants earn \$5.75

(2) Experimental sessions:

- Hourly condition – participants in this condition earn \$5.75 for each session
- Incentive condition – for participants in this condition, use pay chart

Appendix J

Instructional Script: Hourly Pay Condition

Hourly Pay Condition

I want to remind you that you will earn \$5.75 for this session and the next 2 sessions, and that I will pay you in cash at the end of the study. I will also tell you how many checks you completed correctly during each session at the end of the study. However, if you would like to receive immediate feedback on your performance of the experimental task at any time during the session, you can use the computer mouse to press the “Feedback” button on menu bar of the check program. When you press this button, you will receive feedback on the following: (1) the current number of checks completed, (2) the current number of checks completed correctly, and (3) the current rate of check completion, which is updated every 30 seconds. You can also get feedback by using the Alt+F command on the keyboard. The feedback dialogue box will remain on the screen until you click the “OK” button on the dialogue box or until the “Enter” key is pressed on the keyboard.

Once again, please leave your personal belongings (including your cell phone or pager) and books in this room. You may take a break whenever you like for as long as you like. You may play one of the computer games as a break, or you may also just stretch and relax. After I start the check task in the experimental room, I will leave the room and be in the laboratory room across the hall. If you need anything during the session, just come get me. Do you have any questions?”

Appendix K

Instructional Script: Monetary Incentive Pay Condition

Individual Monetary Incentive Pay Condition

I want to remind you that you will earn \$.007 for each check you complete correctly, and that I will pay you in cash at the end of the study. I will also tell you how many checks you completed correctly during each session at the end of the study. However, if you would like to receive immediate feedback on your performance of the experimental task at any time during the session, you can use the computer mouse to press the “Feedback” button on menu bar of the check program. When you press this button, you will receive feedback on the following: (1) the current number of checks completed, (2) the current number of checks completed correctly, and (3) the current rate of check completion, which is updated every 30 seconds. You can also get feedback by using the Alt+F command on the keyboard. The feedback dialogue box will remain on the screen until you click the “OK” button on the dialogue box or until the “Enter” key is pressed on the keyboard.

Once again, please leave your personal belongings (including your cell phone or pager) and books in this room. You may take a break whenever you like for as long as you like. You may play one of the computer games as a break, or you may also just stretch and relax. After I start the check task in the experimental room, I will leave the room and be in this room. If you need anything during the session, just come get me. Do you have any questions?”

Appendix L

End of Study: Participant Feedback Forms

Participant Feedback Form: Hourly Pay System

Participant Number: _____

Session Number	Session Date	Number of Checks	Number of Correct Checks	# of Times Feedback Button was Pressed
1				
2				
3				

TOTALS-----

PAYMENT FOR PARTICIPATION:

\$5.75 FOR INTRODUCTORY SESSION **\$5.75**

\$5.75 FOR KEYBOARD ASSESSMENT SESSION **\$5.75**

PAY FOR EXPERIMENTAL SESSIONS (\$5.75 X 3 SESSIONS) **\$17.25**

TOTAL PAY

Participant Feedback Form: Monetary Incentive Pay System

Participant Number: _____

Session Number	Session Date	Number of Checks	Number of Correct Checks	Amount of Incentive Pay Earned (use pay chart)	# of Times Feedback Button was Pressed
1					
2					
3					

TOTALS-----

PAYMENT FOR PARTICIPATION:

\$5.75 FOR INTRODUCTORY SESSION **\$5.75**

\$5.75 FOR KEYBOARD ASSESSMENT SESSION **\$5.75**

PAY FOR EXPERIMENTAL SESSIONS

(Amount of incentive pay earned for all 3 sessions)

TOTAL PAY

Appendix M
Post-Study Participant Questionnaire

Post-Study Participant Questionnaire

Participant Number: _____

Please complete the following questions. All information you provide will remain confidential.

1. What did you think this study was about?
2. Did you know that some of the other participants were paid differently? If so, how and when did you discover that?
3. Did you set any performance goals during the study? If so, what were they?
4. Did you use the feedback feature of the computer task to obtain immediate performance feedback during any of the experimental sessions?

If you did not use the feedback feature, was there a reason why you did not use this feature?

If you did use the feedback feature, why did you use this feature?

5. If you used the feedback feature, did you like having the option to obtain feedback and was the feedback you received helpful?
6. Would you have preferred to have received some other type of feedback during the study, other than what was available to you?
7. If you used the feedback feature, do you feel the feedback provided increased your performance?
8. If you used the feedback feature AND set goals, did the feedback cause you to set goals?

Appendix N
Debriefing Script

Debriefing Script

Following the last session of participation:

1. Thank you for participating in this study.
2. I would like to explain the purpose of the study to you.

The purpose of this study was to compare the effects of individual monetary incentives and hourly pay on self-solicited feedback and on the performance of the experimental task. What this means is that I was interested in comparing the number of times individuals pressed the "Feedback" button during experimental sessions under the two different pay conditions. Additionally, I was interested in comparing the number of checks correctly completed under both pay conditions.

You were one of the participants who [did, did not] receive incentives.

The computer games were available because we believe that without incentives individuals may spend more time performing non-work activities, which would decrease the number of checks completed and also affect the number of times individuals solicited feedback. Thus, we included them as activities that you might play instead of working on the check task.

3. (Give the participant the form that indicates the number of checks he/she completed and number of times he/she solicited feedback each session). This form indicates the number of checks that you processed correctly during each session and the number of times you solicited feedback on your performance during each session. As you can see, you processed a total of _____ checks and solicited feedback a total of _____ times during the entire study. Because you earned [\$.007 per check, \$5.75 a session, regardless of the number of checks you completed correctly], your [pay totaled] _____.
4. Do you have any questions about this study or your participation?

Appendix O

Pay Chart

Pay Scale for Monetary Incentive Condition (\$0.007/check)

# Checks	Pay	# Checks	Pay	#Checks	Pay
100-104	\$ 0.70	455-461	\$ 3.20	812-818	\$ 5.70
105-111	\$ 0.75	462-468	\$ 3.25	819-825	\$ 5.75
112-118	\$ 0.80	469-475	\$ 3.30	826-832	\$ 5.80
119-125	\$ 0.85	476-482	\$ 3.35	833-839	\$ 5.85
126-132	\$ 0.90	483-489	\$ 3.40	840-846	\$ 5.90
133-139	\$ 0.95	490-496	\$ 3.45	847-854	\$ 5.95
140-146	\$ 1.00	497-504	\$ 3.50	855-861	\$ 6.00
147-154	\$ 1.05	505-511	\$ 3.55	862-868	\$ 6.05
155-161	\$ 1.10	512-518	\$ 3.60	869-875	\$ 6.10
162-168	\$ 1.15	519-525	\$ 3.65	876-882	\$ 6.15
169-175	\$ 1.20	526-532	\$ 3.70	883-889	\$ 6.20
176-182	\$ 1.25	533-539	\$ 3.75	890-896	\$ 6.25
183-189	\$ 1.30	540-546	\$ 3.80	897-904	\$ 6.30
190-196	\$ 1.35	547-554	\$ 3.85	905-911	\$ 6.35
197-204	\$ 1.40	555-561	\$ 3.90	912-918	\$ 6.40
205-211	\$ 1.45	562-568	\$ 3.95	919-925	\$ 6.45
212-218	\$ 1.50	569-575	\$ 4.00	926-932	\$ 6.50
219-225	\$ 1.55	576-582	\$ 4.05	933-939	\$ 6.55
226-232	\$ 1.60	583-589	\$ 4.10	940-946	\$ 6.60
233-239	\$ 1.65	590-596	\$ 4.15	947-954	\$ 6.65
240-246	\$ 1.70	597-604	\$ 4.20	955-961	\$ 6.70
247-254	\$ 1.75	605-611	\$ 4.25	962-968	\$ 6.75
255-261	\$ 1.80	612-618	\$ 4.30	969-975	\$ 6.80
262-268	\$ 1.85	619-625	\$ 4.35	976-982	\$ 6.85
269-275	\$ 1.90	626-632	\$ 4.40	983-989	\$ 6.90
276-282	\$ 1.95	633-639	\$ 4.45	990-996	\$ 6.95
283-289	\$ 2.00	640-646	\$ 4.50	997-1004	\$ 7.00
290-296	\$ 2.05	647-654	\$ 4.55	1005-1011	\$ 7.05
297-304	\$ 2.10	655-661	\$ 4.60	1012-1018	\$ 7.10
305-311	\$ 2.15	662-668	\$ 4.65	1019-1025	\$ 7.15
312-318	\$ 2.20	669-675	\$ 4.70	1026-1032	\$ 7.20
319-325	\$ 2.25	676-682	\$ 4.75	1033-1039	\$ 7.25
326-332	\$ 2.30	683-689	\$ 4.80	1040-1046	\$ 7.30
333-339	\$ 2.35	690-696	\$ 4.85	1047-1054	\$ 7.35
340-346	\$ 2.40	697-704	\$ 4.90	1055-1061	\$ 7.40
347-354	\$ 2.45	705-711	\$ 4.95	1062-1068	\$ 7.45
355-361	\$ 2.50	712-718	\$ 5.00	1069-1075	\$ 7.50
362-368	\$ 2.55	719-725	\$ 5.05	1076-1082	\$ 7.55
369-375	\$ 2.60	726-732	\$ 5.10	1083-1089	\$ 7.60
376-382	\$ 2.65	733-739	\$ 5.15	1090-1096	\$ 7.65
383-389	\$ 2.70	740-746	\$ 5.20	1097-1004	\$ 7.70
390-396	\$ 2.75	747-754	\$ 5.25	1005-1011	\$ 7.75
397-404	\$ 2.80	755-761	\$ 5.30	1012-1018	\$ 7.80
405-411	\$ 2.85	762-768	\$ 5.35	1019-1025	\$ 7.85
412-418	\$ 2.90	769-775	\$ 5.40	1026-1032	\$ 7.90
419-425	\$ 2.95	776-782	\$ 5.45	1033-1039	\$ 7.95
426-432	\$ 3.00	783-789	\$ 5.50	1040-1046	\$ 8.00
433-439	\$ 3.05	790-796	\$ 5.55	1047-1054	\$ 8.05
440-446	\$ 3.10	797-804	\$ 5.60	1055-1061	\$ 8.10
447-454	\$ 3.15	805-811	\$ 5.65	1062-1068	\$ 8.15