

A Preliminary Examination of the Effects of Repeated Observation on Productivity
as an Analog of Micromanagement

by

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Abstract

The current study evaluated the effect of repeated observation on work-related behavior in an analog setting. The goal was to determine the effects of repeated intrusive observation on productivity. The study was designed as an analog analysis of the effects of micromanagement in an organizational setting.

Participants were 60 undergraduate psychology students at a private university in the southeastern United States. A between-subjects group design was used to evaluate the effects of observation. Participants were exposed to varying levels of observation, (nine, two, and zero instances per session), and their productivity and accuracy on a data entry task were measured. Participants also completed a social validity questionnaire, which provided a description of their preference for the conditions. A smaller group of four participants randomly selected from the two experimental groups received both levels of experimental observation, nine and two instances, and were then allowed to choose which condition they preferred for a third session. Mean rate of correct responses per minute was compared across conditions using an analysis of variance (ANOVA). Results show that increased frequency of observation did not impact performance to a statistically significant degree. However, the number of errors participants made while performing the task was significantly higher in the control condition (i.e., zero observations per

session) relative to the other two conditions. These results are discussed in terms of their implications for future research on micromanagement.

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Introduction

In popular culture, management style and micromanagement, in particular, are described as having a strong impact on business performance. To micromanage, according to Merriam-Webster is, “to try to control or manage all the small parts of (something, such as an activity) in a way that is usually not wanted or that causes problems,” (Merriam-Webster, n.d.). Dictionary.com states that to micromanage is to, “manage or control with excessive attention to minor details,” (Dictionary.com, n.d.). Even in accepted definitions the negative effects of micromanagement are assumed, and in the case of Dictionary.com observation is assumed to be a part of micromanagement. Richard White (2010) notes that micromanagers oversee their employees too closely, among other problem behaviors. For his book, *My Way or the Highway: A Micromanagement Survival Guide*, Harry Chambers administered a survey to individuals identifying themselves as either managers or non-managers. Respondents indicated that 79% had experienced what they referred to as micromanagement by their current or former managers. Of respondents who identified themselves as managers, 27% said they are currently being micromanaged, 62% stated that they had considered

changing jobs because of being micromanaged, 32% said they had actually changed jobs because of being micromanaged, 73% said that being micromanaged had interfered with their job performance, and 77% said their morale had been impacted negatively by being micromanaged. Of those who currently identified as non-managers, 37% said they are currently being micromanaged by their manager, 69% said they considered changing jobs due to micromanagement, 36% said they had actually changed jobs because of being micromanaged, 71% said that being micromanaged had interfered with their job performance, and 85% said their morale had been impacted negatively by being micromanaged (Chambers, 2004, p.22-24). If one assumes that this survey is representative of the workforce as a whole, these data indicate that more than 75% of all workers worldwide are impacted by micromanagement. Although the effect of micromanagement is likely positive for the micromanager in the short term, because he or she is able to closely monitor performance that affects him, this book indicates that micromanagement has a detrimental effect on those being micromanaged, which in turn, may be detrimental even to the micromanager over a longer time span.

Despite these data, micromanagement remains under-studied in the scientific literature. In fact, no studies have empirically examined micromanagement. In the business literature many articles are written about micromanagement and how to avoid or prevent its occurrence. Some posit that it is really an issue of trust, that managers do not trust their subordinates and thus must

control their every move (Elbin, 2017). Others propose that in the new tech connected workplace it may be too easy to observe employees leading to a temptation to over manage (Canner & Ethan, 2016). However, no empirical research has been attempted on the behavioral effects of, and sources for micromanagement. Some studies in the behavioral literature have researched related topics, like reactivity, or the use of management attention as an intervention. The first question a behavioral scientist might have regarding micromanagement is how the behavior could be shaped and maintained by its environmental contingencies if it has an overall negative effect. A second important question regarding micromanagement would be to investigate the sources of its negative effects. One source of the possible negative effects of micromanagement could be the repeated observation of the work performance of subordinates. As research in reactivity (discussed later) shows, observation alone can have an impact on performance. Repeated observation, as one characteristic of micromanagers (Chambers, 2004, p.14) could then be a source for possible negative effects. Though managerial presence has been used as an intervention to increase performance in the past, it is the goal of research in micromanagement to find the level of various micromanagement parameters at which that presence or scrutiny is excessive and becomes a detriment to performance.

The Shaping of Micromanagement

To answer the question of how micromanagement might be shaped, it is useful to examine research on how other behaviors that are problematic for everyone involved may be shaped. Parental nonadherence to behavioral interventions parallels micromanagement in that they both involve a net negative outcome, over-supervision in the case of micromanagement and non-adherence in parent training, maintained by the more short term contingencies. That is, in the short term, both over-supervision and non-adherence to treatment plans produce outcomes favorable to managers and parents, respectively. However, in the long term these practices often prove detrimental to all involved, in parental non-adherence to interventions maintaining disruptive possibly even violent child problem behavior, and in the case of micromanagement causing an overall loss in productivity. Because these two have a similar structure research in parental non-adherence to behavioral plans could serve as a model of how micromanagement behaviors can develop.

When implementing a behavioral intervention, consistency in the form of parental continuation of the intervention at home is required for success (Allen & Warzak, 2000). An extensive line of study within behavior analysis has endeavored to better train parents to adhere to interventions as set out by behavior therapists. Within this line of research several models have been proposed to explain the nonadherence of parents to behavior intervention plans. Allen and

Warzak (2000) attempted to functionally analyze parent behavior by examining all of the factors that could lead to nonadherence. One of the main factors they looked at was how child behavior impacts parent behavior. Among other things, they found negative child behavior could impact the adherence or nonadherence of parents to treatment procedures. Basically, if a child has more problem behavior during or shortly after a parent actively implements a treatment, the parent is much less likely to continue that treatment. This would seem to be obvious but it acts counter to the ultimate improvement of the child's behavior. In the long term, the parent's adherence to the behavior plan is most likely to improve the child's situation, and by extension the parents, but in the short term it causes more problem behavior.

This set of contingencies is referred to as a negative reinforcement trap (Patterson, 1976). In a negative reinforcement trap the behavior receives reinforcement in the short term, commonly by removal of a negative situation, for emitting behavior that in the long term makes their situation worse. As an example of how this works in parent training, Sloman et al. (2005) showed that caregiver behavior could be maintained by temporary changes in child behavior. They observed 5 caregiver-child dyads and used descriptive analysis to study their interactions. The participants were observed together in either a laboratory or home setting largely unscripted. They were told to interact with the child as they normally would. In some cases, researchers noted that caregivers avoided certain

situations, such as self-care, and in these cases the researchers prompted caregivers to approach these situations. Each instance of reprimanding behavior, in this case defined as disapproving statements directed toward the child by a caregiver, was noted and the 10 second periods before and after that behavior were analyzed for instances of problem behavior by the child. For four of the study's participant groups one instance of problem behavior generally preceded reprimand and none followed. For the fifth group the most likely form was three instances of problem behavior before a reprimand and one after. The study found that a majority of reprimands resulted in a momentary decrease in problem behavior. In simple terms, caregiver reprimands resulted in less problem behavior, at least in the short term, which would likely maintain caregiver reprimands. However, reprimands have been shown to sometimes maintain problem behavior, as the studies described below illustrate. This study illustrates that caregiver behavior such as reprimands can, in the short term, reduce child problem behavior, reinforcing the reprimand behavior. This fits into the short term reinforcement leg of the negative reinforcement trap discussed previously. The following studies show how that same behavior can also contribute to the long term component of the negative reinforcement trap as well.

Fisher, Ninness, Piazza and Owen-DeSchryver (1996) studied a child for whom attention was reinforcing. After determining through a standard functional analysis that the client's problem behavior was maintained by attention, they ran a

pair of conditions in which problem behavior was followed by verbal feedback. In one condition the feedback was specific to the behavior, responding, “that hurts,” to being struck for instance, and in the other the verbal statements were unrelated to behavior in any way, responding, “the weather is sunny,” for instance. What Fisher and colleagues found was that, for this individual, reprimands specifically were not only reinforcing, but much more reinforcing, than neutral verbal statements when provided contingent on problem behavior.

Further, Taylor and Carr (1992) found that children whose behavior was maintained by attention were more likely to receive attention from caregivers. Taylor and Carr observed adults interacting with 3 groups of children, normal children with little to no problem behavior, attention-seeking children, and socially avoidant children. They found that adults were least likely to attend to the socially avoidant group, who were most likely to emit problem behavior in situations with high adult attention. Additionally, they found that adults were more likely to attend to the attention-seeking group who were most likely to emit problem behavior in low adult attention conditions than to normal children who emitted little to no problem behavior in any condition. This is interesting because it shows that adult behavior is sensitive to the conditions created by a child’s behavior even to the adult’s ultimate detriment, making the child’s problem behavior more likely in the future. These two studies (Fisher et al., 1996; Taylor & Carr, 1992) support the

notion of a negative reinforcement trap in that they illustrate how a behavior which produces a short term benefit may be detrimental in the long term.

Data from Taylor and Romanczyk (1994) also support this finding, extending it into an educational setting. Researchers observed three staff members, two special education teachers and a speech and language therapist. These staff members interacted with three female and twelve male students attending a university-based special education program who had been nominated as having frequent, severe problem behavior that is presumably maintained by attention or escape. The students ranged in age from 3 to 11 years old and displayed delayed cognitive and receptive language skills. The teachers presented three tasks in a discrete-trial format to each student, selected from their individual education plan. In the first phase of the research the distribution of adult attention was monitored. Students who received the most attention were noted and hypothesized to have problem behavior maintained by attention.

The second portion of the study involved brief functional assessments of the behavior of the students receiving the most attention. The functional analysis conditions involved variation in both adult attention, high and low, and task demands, easy and difficult. The first condition consisted of a baseline in which the child was allowed to play freely and was praised for appropriate play, a low demand therapist ignore phase, in which the therapist presented an easy task and ignored all appropriate behavior and only verbally redirected problem behavior, a

low demand therapist attention phase in which the therapist presented an easy task and attended to all appropriate behavior while ignoring problem behavior, a high demand therapist ignore phase in which a difficult task was presented and the therapist ignored appropriate behavior, and finally a high demand therapist attention condition in which a difficult task was presented and the therapist attended to proper behavior. These conditions allow discrimination between behaviors maintained by attention and those maintained by escape from task demands. In this second part of the study, the researchers found that those students who received the highest levels of attention had problem behavior maintained by attention. The goal of this study was to validate the use of analyses of teacher attention distribution as an indicator of what contingencies maintain child problem behavior but it also serves to prove the converse. That is, that teachers are most likely to provide the greatest amount of attention to problem behavior maintained by attention. In so doing they are, likely inadvertently, reinforcing that behavior.

Because Sloman and colleagues' (2005) research was descriptive we cannot conclude that the reprimands reduced problem behavior. We can only conclude that following reprimands, problem behavior reduced temporarily. Taking these studies into account, it is likely common for reprimands to be used on children whose behavior is reinforced by these reprimands, making it also possible that the momentary reductions observed by Sloman and colleagues were a result of a post reinforcement pause rather than any behavior reducing effect of reprimands

(Cooper, Heron, Heward, 2007). Reprimands, then, could result in a momentary reduction in problem behavior, which reinforces parent reprimanding, while simultaneously reinforcing the child's problem behavior and making it more likely in the future. Taken together, these studies describe how a parent's reprimanding behavior (not part of the prescribed behavioral intervention for attention maintained behaviors) can fit into a negative reinforcement trap by lessening a child's problem behavior (in the short term), while in the long term reinforcing the child's problem behavior and making it more likely.

An example of how this negative reinforcement trap might occur in an organizational setting can be seen in the research of Brackett, Reid, and Green (2007). They observed a set of two job coaches at a small publishing company hired to provide direct services to three employees with disabilities. The job coaches were instructed that breaks should consist of clearing the work area, selecting a snack or leisure activity, enjoying the snack or leisure activity, removing the snack or leisure item from the work area, and replacing the work materials on the work area. The job coaches were also instructed to prompt this behavior, eventually teaching the employees to complete the task themselves. They were explicitly instructed not to perform this activity for the employees. A job coordinator then observed the coaches and recorded how often they performed the tasks for the worker. In the baseline condition, the coordinator observed openly taking notes and provided feedback to the coaches after each break. This baseline

was also the maintenance phase of the previous training program designed to teach the coaches to prompt rather than perform the actions of the employee. The first experimental condition involved the job coordinator appearing to perform other tasks near the coaches, but still observing whether they completed or prompted the break time activities. This condition was not followed by feedback. After a return to baseline segment of more conspicuous observation, the final experimental condition consisted of providing workers with a self-recording sheet to prompt them to analyze their own behavior. The coordinator still observed inconspicuously during this condition.

Neither job coach performed any of the steps for their worker while being conspicuously observed, however when not observed they performed between 80%-100% of the tasks for their worker. When the second conspicuous observation was performed, they immediately returned to performing none of their worker's tasks. In the final condition, it appears that the self-observation intervention kept the coaches from performing tasks for their workers. The authors caution that the control shown by the self-reporting forms may have come from their pairing with conspicuous observation and that it is unclear if those results would have been obtained without the establishment of this connection (Brackett, Reid, Green, 2007).

From the perspective of the job coordinator, training the coaches appears to have failed. The coaches were explicitly trained not to complete tasks for their

worker but when not observed they completed a majority of steps. However, conspicuously observing the coaches succeeded in that while observed, the coaches performed none of the tasks they were supposed to prompt. This could lead the observer to the conclusion that continuing to observe their subordinates would continue to produce correct behavior. If the coordinator's own performance were rated on the success of the coaches, it would create a situation in which the coordinator is incentivized, at least in the short term, to constantly supervise. The constant supervision would never actually address the causes of poor performance among their subordinates. If observation is the only thing maintaining proper performance and the coordinator got sick at some point and had to miss a day of work, performance would, presumably, collapse in their absence. In much the same way that parents can enter a reinforcement trap in which they maintain problem behavior, the job t likely found that performing the tasks for their trainees was easier than attempting to more meaningfully change trainee behaviors, though the use of prompting and ultimately learning could eventually lead the worker to perform the tasks independently. In the case of the coordinator, whatever social contingency counteracts the coach behavior of simply performing the tasks in the presence of the coordinator is unlikely to be enjoyable for the coaches in the long term. The coaches' responses to the sustained aversive condition of having to work harder while observed would then create the long term worsening condition of the negative reinforcement trap for the coordinator. In sum, from the perspective of the

coordinator, the behavior of constant observation would, in the short term, be reinforced by the coaches' proper behavior, but in the long term would likely result in further problem behavior due to the aversiveness of the observation. In this way, a negative reinforcement trap is established for the management behavior of the coordinator.

A negative reinforcement trap provides a framework to understand how micromanagement could develop. A manager could find that, at least in the short term, their behavior of constant conspicuous observation increases productivity. This short term change would likely maintain the supervisor's behavior while simultaneously creating an aversive situation for those observed. This situation would likely lead to the presumed negative effects of micromanagement and these negative effects would worsen the manager's long term situation. This explains how a detrimental behavior could be maintained by temporary reinforcement.

Research on Reactivity

Another line of study related to micromanagement and possibly a major influence of the proper behavior noted by Brackett and colleagues (2007) is reactivity. Reactivity is defined as the effect that observation can have on those observed. Because micromanagement is often characterized by management observation of employees, reactivity could be a source of its effects. In the context of research reactivity refers to a situation in which behavior may be changed simply

by the presence of an observer. This effect must be noted in order for the results of a study to generalize to the same setting without researchers present (Kazdin, 1979). In an applied setting, reactivity may be responsible for a change in employee behavior when that employee is observed by a supervisor.

Therrien, Wilder, Rodriguez, and Wine (2005) utilized this to affect performance change by including managerial presence in a package intervention. The study involved nine employees of a single location of a nationwide sandwich restaurant chain. All employees were trained upon hiring that restaurant policy was for customers to be greeted within three seconds of entering the store. Between three and four employees were behind the service counter at any given time and were responsible for greeting customers upon entry. Researchers counted customers as either greeted or not, either for 30 customers or for 60 minutes, whichever came first during an observation period. The primary goal was to examine the environmental variables responsible for poor performance in an organizational setting and to increase the incidence of the greeting behavior of employees. To this end, a pre-intervention analysis was used, in which five antecedent conditions were tested for their effects on greeting.

The antecedent conditions were chosen after discussing with the manager of the facility what issues might occasion low greeting. Five conditions designed to capture the conditions were employed: uncontrolled, manager presence, radio, door chime, and control. During the uncontrolled condition, no manipulations were used

but the antecedents were allowed to fluctuate naturally rather than being intentionally isolated. The manager presence condition included the manager remaining behind the service counter but did not include any other manipulations. During the other conditions the manager was only present behind the counter when necessary, based on their job requirements. During the radio on condition, a radio was allowed to play at a normal volume behind the service counter. The radio condition was included because the manager anecdotally observed that some workers would go to the back room to listen to music, leaving the front unattended. The chime condition involved activating a previously installed chime on the door to indicate when it was opened. During the chime condition, no other manipulations were present. Finally, for the control condition, the manager was not present behind the counter, the door chime was turned off and the radio was not played. This differed from the uncontrolled condition because all of the other manipulations including the manager's presence were specifically removed, while in the uncontrolled condition they were allowed to vary naturally, though not specifically arranged. Each of these conditions was run 3 times and their order was randomized. All employees participated in at least one session of each condition and a multielement design was used to evaluate the results. In sessions in which the manager was present he did not prompt employees to greet customers and kept his own greeting to only once or twice a session. His greetings were not calculated in the data regarding customer greeting.

Based on preintervention results, the researchers determined that the door chime, which had a mean greeting level of 44%, and manager presence, which had a mean greeting level of 21%, were the conditions which produced the highest levels of greeting. The radio condition, which had a mean of 0% of customers greeted, was discarded. During the control condition, 6% of customers were greeted and in the uncontrolled condition, 5% of customers were greeted. An ABAB reversal design was used and included a baseline phase in which antecedents were free to vary and an intervention phase in which the manager remained behind the counter and the door chime remained active. This package intervention produced substantial increases in greeting, with a 71% mean percentage of customers greeted in the first manger plus chime phase. The second phase, however, only produced a mean of 49% of customers greeted. Thus, an additional phase was added in which verbal and graphical feedback were provided to employees based on greeting performance. In the final phase, which included a consequence-based feedback intervention, a mean of 75% of customers were greeted, ranging from 40% to 100% (Therrien et al. 2005).

Lebbon and Austin (2013), however, showed that the increases in performance caused by obtrusive observation can be temporary. Though they were attempting to find a way for researchers to avoid reactivity through habituation to researcher presence, they ultimately showed that fatigue effects can reduce the increases in performance during prolonged observation. This study looked at the

effect of observation on some work-related tasks for purposes of determining the extent to which observation in research affects those observed. The study included 3 undergraduate psychology students who were paid \$5 per hour for participation, independent of any specific level of productivity. The research was conducted in a simulated office setting in a laboratory room. Participants were observed and recorded by a wireless camera hidden in a picture frame and were only informed of the camera upon completion of the study. The dependent variables studied were three work-related body posture behaviors and a time on task measure. The three body postures included back position, leg position, and foot position, which were measured against Occupational Safety and Health Administration (OSHA) ergonomic guidelines and were scored using a 20 second momentary-time-sampling procedure by trained observers. Time on task was measured using a Visual Basic Editor macro that automatically recorded how many characters were typed in a 20 second interval. If any characters were typed in a given 20 second interval, that interval was recorded as “on task”. Prior to their first session, participants were fully trained on the postures including demonstrating proper body postures for the researcher, and receiving corrective feedback. Participants received one of two conditions: information or information plus observer. In both conditions, written information about proper ergonomic postures was provided as a prompt for correct performance. In the information-only condition, participants were allowed to work for 54 minutes alone while observed via a hidden camera. In

the information plus observer condition, an observer was present in the room for the entire 54-minute session, sitting approximately 1.2 meters away from the participant with a clipboard and pencil. The observer made four circles approximately every 20 seconds on a data sheet to simulate obtrusive observation. In addition, to test whether habituation to specific stimuli was occurring, participant one was exposed to two different observers during the second observer plus information phase.

All participants showed varying levels of reduction in safety behaviors towards the end of sessions and some amount of recovery at the beginning of the next session. It should be noted that participant three showed more intermittent recovery than the other participants, only appearing to show recovery every other session during observation two. Reactivity appeared to occur and maintain despite the presence of the observer for 9-16 nonconsecutive hours, leading the authors to believe that decreases were due to fatigue rather than habituation. When observers were rotated, results appear to further support the belief that decreases in responding were due to fatigue and not habituation, as levels of responding showed similar decreases over time. During debriefing, all participants reported that they felt obligated to work to avoid being criticized or viewed as lazy. All participants also indicated that at some point they felt fatigued, annoyed, or careless during their work in the research room. Participants one and two indicated that because the observer did not provide any negative or corrective feedback, they didn't feel

overly obligated to maintain the posture behaviors. Participant three however, reported feeling scrutinized so that responding appropriately felt important (Lebbon & Austin, 2013).

These studies suggest that in some cases supervisory attention or observation can result in temporary and ultimately ineffectual changes in employee or supervisee behavior. Thus, potentially harmful managerial over-observation could be maintained by a temporary increase in work related behavior on the part of the employee but ultimately decrease employee performance through fatigue effects or emotional responding as a result of the aversive condition fitting into both the short term gain and long term worsening of a negative reinforcement trap. There are several possible sources of the negative effects of micromanagement. One is a history of interactions with the manager in question, both positive and negative. Another could be the quality or intrusiveness of the observation, and finally the frequency of observations could cause the negative effects attributed to micromanagement. The current study focuses specifically on how different frequencies of supervisor observation affect supervisee performance in an analog laboratory setting. Observation alone, as the research on reactivity shows, can have an impact on the performance of those observed and, as Chambers mentions, constant increased attention is one of several facets of micromanagement. For these reasons and because it is the most basic of the three proposed sources, frequency of

observation was selected as the target of the current research project. Researcher observation in the study is designed to serve as an analog of micromanagement.

Hypothesis

The hypothesis of the current study is that more observation will negatively affect the performance of subjects on a work task. The data are expected to show greater supervisee or participant performance and fewer errors under the low observation condition than under the high observation condition and by extension greater performance under the control condition than the low observation condition. In addition, this study included a sub-set of participants who chose their most preferred observation condition. It was expected that this choice group would choose the lower observation condition.

Method

Participants, Setting, and Materials

Participants in the experiment were 60 undergraduate students at a medium-sized, private university who earned course credit or money for participation. They ranged in age from 18 to 30 and included both male and female students. The 60 students were randomly separated into three groups of 20 participants. Sessions were 15 minutes in duration. Participants worked on a task presented in a medical data entry analog software program. The program displayed several health data points about a fictitious patient for medical services and asked the participant to identify the gender of the patient and determine if the value noted as “QT Interval” fell within provided ranges based on gender. The participants’ task was to type the patient’s identification number and click one of two selection boxes indicating whether the patient’s value fell within the accepted range or outside the accepted range (See Figure 1). The sessions took place in a room approximately 5 meters by 5 meters with no windows. The room included a desktop computer on a desk with the medical data entry software loaded on it. The computer was also loaded with an activity monitoring program that provided the researcher with data on the duration that the participant kept the data entry software as the primary window.

Dependent Variables

The main dependent variables were correct and incorrect responses per session. These dependent variables were measured automatically by the software program. Correct responses were reported as a rate (per minute) of correct responses and used as a measure of overall productivity. Incorrect responses are reported as an overall count in each session and are used as a representation of overall accuracy. A secondary dependent variable was the choice of condition for four participants who received both observation conditions. The selected condition indicated preference for a given level of observation. A social validity questionnaire provided a second measure of preference.

The social validity questionnaire included a likert scale, which provided a measure of the effects of observation on work enjoyment. The more open-ended questions at the end of the social validity questionnaire provided potentially interesting information about the possible effects of a history of “micromanagement” on the current experiment.

The monitoring program provided another variable in the form of a time on task measure. The program allowed the researcher to track how long the participant kept the data entry task as the primary window.

Data Analysis

The mean performance for each group was calculated and compared between groups using an analysis of variance (ANOVA; alpha set at .05). Social validity responses were compared by calculating means for each group, and then comparing groups using an ANOVA. For four participants, two from each experimental group, responding was compared across sessions within subjects.

Design and Procedure

A between-subjects group design was used in which each group received a different amount of researcher observation. The baseline or control group, and the high observation and low observation experimental groups each received three sessions of the same condition. Prior to the beginning of the first session, an assistant explained the medical data entry software used and instructed participants to proceed as if the data entry task were their job. The assistant then advised the participant that a “manager” would be periodically checking in on them. The control group was simply allowed to work with no interruptions. For the low observation group, the researcher entered the room every 5 minutes for approximately 5 seconds and looked silently over the participant’s shoulder. If asked, the researcher indicated that he was simply observing to make sure everything went smoothly. With 15-minute sessions, this created two instances of observation per session. For the high observation group, the researcher entered the

room and observed for approximately 5 seconds every 1.5 minutes; creating nine instances of observation per 15-minute session.

Two participants from each experimental group were randomly selected using a random numbers table and were exposed to 3 different sessions. These participants received the experimental condition they were originally assigned for their first session and received the other experimental condition for their second session. At the end of the second session, the experimenter explained each condition and the participants were asked to choose one of the conditions to experience for their third session.

The assistant gave a brief social validity questionnaire (Appendix A) after the last session for each participant. The questionnaire for the baseline, high, and low observation groups asked participants how enjoyable they found the conditions using a 5-point Likert scale. Additionally, the questionnaire asked whether the participants had ever had a supervisor that they would classify as a “micromanager” and how that classification changed their feelings for the supervisor. For the participants given a choice, the questionnaire included a 5-point Likert rating of each condition they received. The questionnaire also described both conditions and asked under which condition the participant would choose to work in the future.

Inter-observer Agreement

Before roughly one-third of all sessions, a calibration was run in which the researcher performed a set number of responses to ensure that the data were automatically recorded correctly. These sessions were split across all experimental groups. The calibration found the program functioning correctly for the entirety of the study.

Treatment Integrity

During 30 percent of all sessions the researcher and assistant filled out a treatment integrity data sheet. The researcher attested that the assistant correctly explained the introduction and the assistant attested that the researcher correctly performed the observations within 3 seconds before or after the correct time. See Appendix C, the treatment integrity data sheet, for more detail. Mean treatment integrity was 94% with no observations fully missed.

Results

Throughout all sessions, for all participants, time on task remained at 100% with no other programs showing on the personal activity monitor. The mean rates of correct responses per minute for the high observation condition were 4.416 for session 1, 5.326 for session 2, and 5.554 for session 3 while the mean rates for the low observation condition were 4.926 for session 1, 5.556 for session 2, and 5.895 for session 3. Mean rates in the control condition were 4.736 for session 1, 5.546 for session 2, and 5.93 for session 3 (figure 2). The overall means across sessions were 5.459 for the low observation condition, 5.099 for the high observation condition, and 5.404 for the control condition. The results of an ANOVA showed that the between groups differences were not statistically significant $F(2,177)=.889$, $p=.413$ (figure 3).

The number of errors per session were 2.2, 2, and 1.84 for sessions 1, 2, and 3, respectively, in the high observation condition, 3.75, 3, and 2.28 for sessions 1, 2, and 3, respectively, in the low observation condition and 5.95, 3.45, and 4.85 for sessions 1, 2, and 3, respectively, in the control condition (figure 4). The overall errors per session across sessions were 3.01 for the low observation condition, 2.01 for the high observation condition, and 4.75 for the control condition. The results of an ANOVA showed a statistically significant difference in errors between conditions $F(2,177)=6.901$, $p=.001$ (figure 5). Follow-up ANOVA tests were

conducted between all pairs of conditions. Results showed that the difference between the high and low observation conditions ($F(1,118)=5.907, p=.017$), the difference between the low observation and control conditions ($F(1,119)=4.054, p=.046$) and the difference between the high observation and control conditions ($F(1,117)=10.147, p=.002$) were significant (see figures 6-8).

For the four participants who experienced both conditions (i.e., low observation and high observation; see figure 9, which depicts data arranged by condition rather than session) all performed better in the condition they experienced second as opposed to the condition they experienced first, regardless of which condition that was. This suggests that familiarity with the program may have had a stronger influence on responding rates than the differences in condition. All but one also performed highest in the 3rd session (i.e., their choice session) regardless of which condition they chose. When it came to choosing which condition to experience, 3 out of 4 participants chose the low observation condition for their third session and repeated this selection on the social validity questionnaire.

On the social validity questionnaire (figure 10), a majority of participants in all conditions chose “unremarkable” when asked to rate the level of observation. When asked how they enjoyed the conditions of the experiment, 44.44% in the high observation condition and 50% in the low observation condition said they were indifferent to the conditions. A slight majority of participants said that the observer had an effect on their performance (61.11% in the high observation condition,

66.67% in the low observation condition, and 50% in the control condition), though a majority of those who said it affected them said the impact was minimal (50% in the high observation condition, 50% in the low observation condition, and 10% in the control condition) or moderate (37.5% in the high observation condition, 16.67% in the low observation condition, and 50% in the control condition). A majority of participants said that they had been micromanaged in a previous job (83.33% in the high observation condition, 61.11% in the low observation condition, and 65% in the control condition) and that it had made their view of their supervisor more negative (73.33% in the high observation condition, 75% in the low observation condition, and 76.92% in the control condition). Overall, a majority of participants said that they, at some point in the past, had worked at a job where they felt that their contributions were observed and acknowledged (83.33% in the high observation condition, 77.78% in the low observation condition, and 75% in the control condition) and where hard work was rewarded (94.44% in the high observation condition, 72.22% in the low observation condition and 85% in the control condition).

Discussion

Micromanagement is commonly characterized as over observation, or manager attention to a point that it negatively impacts those being observed. The purpose of this study was to determine at what point, if any, that observation has an adverse effect. By utilizing researcher observation as an analog of manager over-observation, this study examined whether employee performance can be negatively impacted by observation.

The results of this study did not yield a statistically significant difference in performance based on the amount of observation. Though the difference is not statistically significant, participants in the high observation condition produced the weakest performance. Participants in the low and control conditions showed nearly identical responding. Interestingly, the number of errors per session was greatest in the control condition and lowest in the high observation condition (see figure 3). It appears that the repeated observation of participants in the high and low observation conditions produced more accurate performance. Although this is inconsistent with the formal hypothesis of this study, it is somewhat consistent with the hypothesized effects of micromanagement in that in the short term, employees may work more carefully, but in the long term this repeated observation may produce problematic performance, or at least dissatisfaction with the job. This effect is also consistent with the model of the negative reinforcement trap. The

reduced number of errors under increased observation may reinforce manager attention in the short term. However, as Lebbon and Austin (2013) noted, these effects may only be temporary. Unfortunately, the work sessions in the current study were brief, so the extended effects of observation cannot be determined. Additionally, the lack of any feedback in the study does not permit an evaluation of any changes to the effects of observation based on managerial feedback.

It is difficult to completely attribute decreased errors to repeated observation, however, due to two outliers in the control condition who had dramatically more errors than any other participants. Without those two participants, the control condition actually had fewer errors per session than the low observation condition, though the high observation condition still had fewer than both other conditions. These results suggest that frequency of observation alone may not be as important as suggested by the data. Nevertheless, the finding that all error condition comparisons were significantly different is interesting. In particular, the finding that the difference between the high and low observation conditions was significant suggests that even without the outlier participants there is a difference in errors based on increased observation not attributable to chance. The limitations of the study, discussed later, as well as the results of the choice participants, suggest that further research on this is warranted.

Three of the four choice participants selected the low observation condition for their third session and reiterated this choice on the social validity questionnaire.

This could indicate that the high observation condition is aversive, though not enough to cause the adverse effects widely believed to be caused by micromanagement. Though the one participant who chose the high observation condition reported never having a micromanager, another of the choice participants who chose the low observation condition had also never had a micromanager.

These results suggest that though the impact was not sufficient to affect performance, the high observation condition was aversive. This is further supported by some anecdotal statements made by several participants, indicating either that they did not enjoy the condition or, when the conditions were explained following the study, that they would not have enjoyed it had they experienced it. This indication that the high observation condition was potentially aversive fits into the negative reinforcement trap previously discussed. Fewer errors caused by increased observation might maintain supervisor behavior that ultimately creates an aversive situation for those observed, leading ultimately to those effects observed in the wider literature. Additionally, the reduction in errors based on level of observation noted in these data could be a form of reactivity to the observer's presence. This could further fit into the negative reinforcement trap as the studies previously discussed found that the increases in behavior caused by reactivity were ultimately temporary.

The results of the social validity questionnaire were also interesting. One of the questions asked was whether participants had ever had what they would

describe as a micromanager in the past. Sixty-eight and one-third percent of participants said that they had. If this is a representative number it means that nearly 70% of the workforce has at some point experienced micromanagement. It is difficult to generalize from a participant list drawn entirely from students at a university but it should be noted that many of the participants were undergraduate students, some even freshman. The fact that 68% of them have already experienced what they would call micromanagement, before entering the workforce in earnest, points to the pervasiveness of the problem. Another question asked participants how that micromanagement affected their perception of the manager. Interestingly, 26.82% of those who said they had previously experienced micromanagement said that it made their feelings about the manager in question more positive. This seems completely counter to the other results of this study and current thinking regarding micromanagement. However, the following two questions asked whether participants had worked somewhere they felt their contributions were observed and acknowledged by management and whether they had ever worked somewhere they felt hard work was rewarded. All of those who said they had experienced micromanagement and it had made their view of the manager more positive said yes to both of these last two questions. In addition, the only choice participant to select the high observation condition answered yes to both questions, though he reported never having experienced micromanagement. Seventy-six percent of those who said that they had experienced micromanagement

and that it had made their perception of the supervisor more negative also answered yes to both of the last questions.

There are several points that can be taken from these results. The fact that 100% of those whose opinion became more positive had experienced positive working environments suggests that positive reinforcement in the workplace is necessary to counteract or redirect the effects of micromanagement. This is consistent with the prevailing wisdom in the organizational behavior management literature which calls for frequent observation in order to allow for frequent feedback and positive reinforcement (Daniels & Bailey, 2014). However, the fact that 76.67% of those whose outlook was made more negative by micromanagement still experienced positive work outcomes suggests one of several possibilities. Positive reinforcement in the workplace could be necessary but not sufficient to counteract any effects of what would otherwise be called micromanagement, which would warrant future research into what the other necessary components may be. The participants could also have experienced the micromanagement and the positive consequences and outcomes at different stages in their working history. This could lead to future research in which repeated intrusive observation, of the kind commonly referred to as micromanagement, and positive consequences are arranged within the same setting, ensuring that both are experienced simultaneously. It is tempting to suggest that this be performed in an applied setting to ensure that the positive consequences carry enough weight to properly

affect perception of the manager and work environment, but applied settings also include the possible confound of past history with the manager. However the research is done, the effect of positive consequences on the perception of micromanagement and how one might shape these perceptions appears to be a fertile line of future research. Finally, some idiosyncratic effect of participants' histories could be the source of this difference of supervisor opinion. Though this possible explanation does not suggest any immediate lines of research if the source of the effect could be determined, its application as an intervention to improve performance and employee morale would likely be quite useful.

Limitations

The primary limitation of the current study is its brief session length and laboratory setting. In an actual organizational setting, employees work for substantially more than 15 minutes at a time. Additionally, in an actual organizational setting contingencies governing performance could result in much stronger consequences, including a pay raise or termination. Closer approximation of the naturalistic work environment or even a similar study in an applied setting could potentially reveal a statistically significant effect of increased observation. Another weakness of the current study is a lack of control for the learning history of participants. In future research, separating groups into those with a history of micromanagement and those without could produce differing effects based on the

associated learning history with previous managers, though no difference was found in participant performance between those who reported a history of micromanagement versus those who did not in the current study.

Future Research

The primary direction of future micromanagement research should be to explore the other possible sources of micromanagement effects. That is, observation of employees may not be a crucial component of micromanagement. However, other behaviors, such as what the manager says to employees, may be important. One future experiment could hold the frequency of observations constant but vary some form of intrusiveness of the researcher across groups. This could be accomplished by having the researcher start varying levels of conversation across groups or by having the researcher make varying levels of noise across groups. Another possibility would be to compare the researcher entering the room in one condition with only an email-like pop-up on the computer as an analog of more technologically connected workplaces.

Another possible source of micromanagement effects could be histories of reinforcement or punishment associated with observation. Though it would be difficult to disentangle the changes in behavior caused directly by reinforcement and punishment contingencies and the changes in micromanagement effects caused by the contingencies in a laboratory, an extended design could be used. By starting

with a low level of observation and reliably following observation with either reinforcing or punishing consequences to create a history, and then measuring performance during a period of increased observation without contingencies in a group design, the effects of the history could be measured independent of the consequences' direct effects.

It would likely be better, however, to study this facet of micromanagement in an applied setting in order to make the results more applicable to the professional world. Finding an applied setting where observation is consistently followed by punishing contingencies and starting with this condition as a baseline could allow changes to be seen within subjects, and avoid the ethical dilemma of intentionally inducing a condition you believe to be bad for business in the interest of research. Starting with a baseline punishing context, possibly increasing the frequency of observation across all participants to ensure the strength of micromanagement effects, and proceeding to ensure that a majority of observations are followed by reinforcing consequences when adequate performance is observed could show a change in performance while holding the frequency of observation constant between phases. This experiment would likely need to be done using a multiple baseline across participants design; use of a withdrawal would again be ethically questionable because of the intentional use of a condition that may be sub-optimal purely in the interest of research. With a multiple baseline design, it would also be important to control for communication between participants, which may

cause carryover effects. It might be wise to find an organizational setting where one supervisor who implements punishment contingencies supervises subordinates across several settings, preventing their consistent communication.

As previously mentioned, an extension of the current study is also necessary. Future research could extend the observation periods to more closely approximate a true workday or conduct the research in an applied setting. The current research could also be extended by introducing a second factor by which groups would be separated. High and low observation conditions could be varied across those with a history of micromanagement as well as those without to determine if there is any difference in the effects of micromanagement based on history, despite the current studies failure to find a statistically significant difference in performance.

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The screenshot shows a software window titled "Data Entry Task" with a yellow header bar that reads "Medical Data Entry Task". The interface is divided into several sections:

- Left Column (Input Fields):**
 - Patient Name:
 - Date of Birth:
 - Current Age:
 - Gender:
 - Patient ID:
 - HR (BPM):
 - QT Interval:
- Top Right (Gender Selection):**
 - FEMALE:
 - MALE:
- Bottom Left (Action Buttons):**
 - START:
 - END:
- Right Column (Interpretation and Submission):**
 - Patient ID:
 - Interpretation: WITHIN RANGE, OUT OF RANGE
 - SUBMIT:
 - Stats:
 - Money:

Figure 1: Example of the software program used in the study

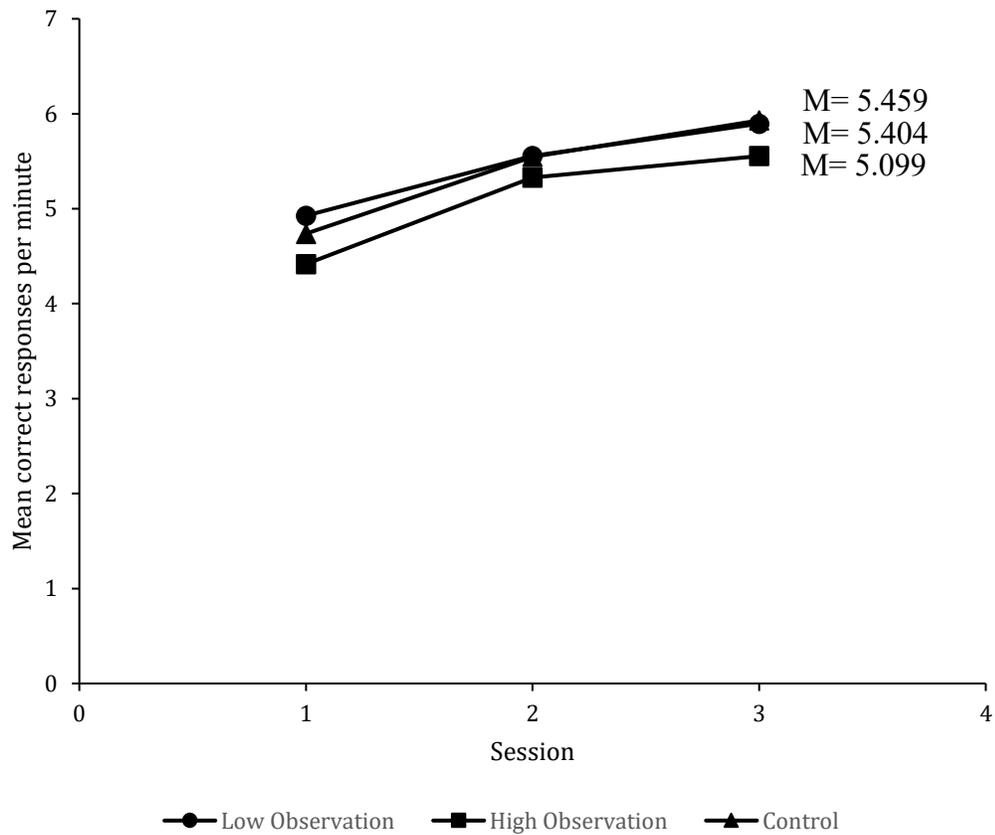


Figure 2: Mean group performances for control condition (triangles), high observation condition (squares), and low observation (circles) shown across three fifteen-minute sessions.

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	4.816	2	2.408	0.889	0.413
Within Groups	479.452	177	2.709		
Total	484.269	179			

Figure 3: Results of the analysis of variance for correct responses by condition.

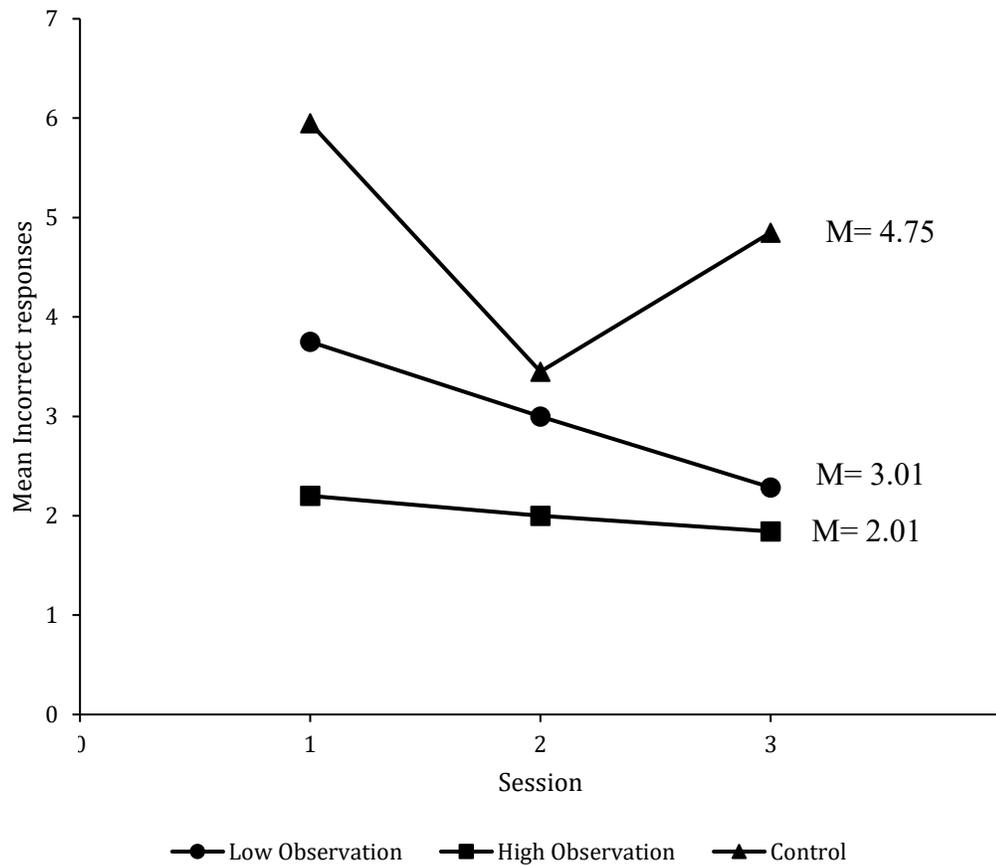


Figure 4: Mean group errors per session for control condition (triangles), high observation condition (squares), and low observation condition (circles) across three fifteen-minute sessions.

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	228.495	2	114.247	6.901	0.001
Within Groups	2930.233	177	16.555		
Total	3158.728	179			

Figure 5: Results of the analysis of variance for incorrect responses per session by condition.

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	28.984	1	28.984	5.907	.017
Within Groups	578.983	118	4.907		
Total	607.967	119			

Figure 6: Results of the analysis of variance for incorrect responses in the high observation condition versus the low observation condition.

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	92.634	1	92.634	4.054	.046
Within Groups	2719.250	119	22.851		
Total	2811.884	120			

Figure 7: Results of the analysis of variance for incorrect responses in the low observation condition versus the control condition.

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	222.204	1	222.204	10.147	.002
Within Groups	2562.233	117	21.899		
Total	2784.437	118			

Figure 8: Results of the analysis of variance for incorrect responses in the high observation condition versus the control condition.

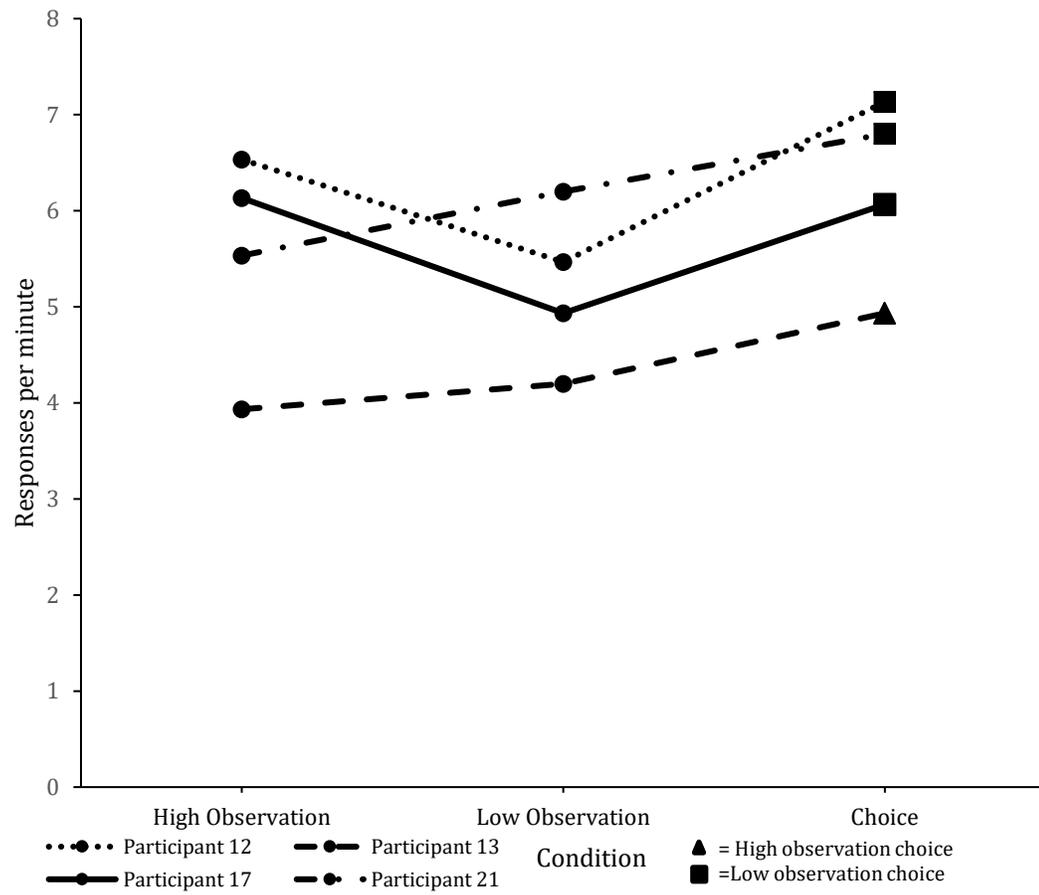


Figure 9: Individual performance across conditions of 4 choice participants, and their choice of third session.

Questionnaire results

H=High observation condition, L=Low observation condition, C=Control condition

On a scale from 1 to 5, how would you rate the level of observation in this experiment	Very Unenjoyable H5.56% L5.55% C5%	Moderately Unenjoyable H5.55% L11.11% C5%	Unremarkable H50% L55.56% C60%	Moderately Enjoyable H38.89% L27.78% C20%	Very Enjoyable H0% L0% C10%
On a scale from 1 to 5, how much did you enjoy the researcher looking over your shoulder during your sessions	Greatly Disliked H5.56% L11.11%	Moderately Disliked H44.44% L38.89%	Indifferent H44.44% L50%	Moderately Enjoyed H5.56% L0%	Greatly Enjoyed H0% L0%
Would you say that the researcher observing you during your sessions had an impact on how many of the tasks you completed?	Yes H61.11% L66.67% C50%		No H38.89% L33.33% C50%		
If yes on a scale of 1 to 5, how much of an impact would you say it had?	No impact H0% L0% C0%	Minimal Impact H50% L50% C10%	Moderate impact H37.5% L16.67% C50%	Strong Impact H12.5% L33.33% C40%	Extreme Impact H0% L0% C0%
In the past have you ever had a supervisor, at a job or in school, which you would describe as a	Yes H83.33% L61.11% C65%		No H16.67% L38.89% C35%		

"micromanager"
?

Were your feelings about this supervisor more positive or more negative because of the behavior you characterize as "micromanaging"?	More Positive H73.33% L75% C76.92%	More Negative H26.67% L25% C23.08%
Have you ever had a job where you felt that your contributions were observed and acknowledged by management?	Yes H83.33% L77.78% C75%	No H16.67% L22.22% C25%
Have you ever had a job where you felt that hard work was rewarded?	Yes H94.44% L72.22% C85%	No H5.56% L27.78% C15%

Choice questionnaire questions

On a scale of 1 to 5, how would you rate the level of observation of the second session of this experiment?	Very Unenjoyable 0%	Moderately Unenjoyable 25%	Unremarkable 25%	Moderately Enjoyable 50%	Very Enjoyable 0%
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Given the conditions of this experiment, under which of the two conditions would you generally prefer to work?

Condition A
75%

Condition B
25%

Figure 10: Results of the social validity questionnaire.

Appendix A

Single Condition Questionnaire

1. On a scale from 1 to 5, how would you rate the level of observation in this experiment?

1:	2:	3:	4:	5:
Very Unenjoyable	Moderately Unenjoyable	Unremarkable	Moderately Enjoyable	Very Enjoyable

2. On a scale from 1 to 5, how much did you enjoy the researcher looking over your shoulder during your sessions?

1:	2:	3:	4:	5:
Greatly Disliked	Moderately Disliked	Indifferent	Moderately Enjoyed	Greatly Enjoyed

3. Would you say that the researcher observing you during your sessions had an impact on how many of the tasks you completed?

Yes	No
------------	-----------

4. If yes on a scale of 1 to 5, how much of an impact would you say it had?

1:	2:	3:	4:	5:
No Impact	Minimal Impact	Moderate impact	Strong Impact	Extreme Impact

5. In the past have you ever had a supervisor, at a job or in school, which you would describe as a “micromanager”?

Yes	No
------------	-----------

6. Were your feelings about this supervisor more positive or more negative because of the behavior you characterize as “micromanaging”?

More positive	More Negative
----------------------	----------------------

7. Have you ever had a job where you felt that your contributions were observed and acknowledged by management?

Yes	No
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8. Have you ever had a job where you felt that hard work was rewarded?

Yes	No
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Appendix B

Choice Condition Questionnaire

1. On a scale from 1 to 5, how would you rate the level of observation of the first session of this experiment?

1:	2:	3:	4:	5:
Very Unenjoyable	Moderately Unenjoyable	Unremarkable	Moderately Enjoyable	Very Enjoyable

2. On a scale from 1 to 5, how would you rate the level of observation of the second session of this experiment?

1:	2:	3:	4:	5:
Very Unenjoyable	Moderately Unenjoyable	Unremarkable	Moderately Enjoyable	Very Enjoyable

3. The two conditions of this experiment were:
- a. A: The researcher enters the room and observes the participant once every 5 minutes for a total of 2 times per session.
 - b. B: The researcher enters the room and observes the participant once every 1.5 minutes for a total of 9 times per session
- Given this under which of the two conditions would you generally prefer to work?

Condition A	Condition B
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4. On a scale from 1 to 5, how much did you enjoy the researcher looking over your shoulder during your sessions?

1:	2:	3:	4:	5:
Greatly Disliked	Moderately Disliked	Indifferent	Moderately Enjoyed	Greatly Enjoyed

5. Would you say that the researcher observing you during your sessions had an impact on how many of the tasks you completed?

Yes	No
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6. If yes, on a scale of 1 to 5 how much of an impact would you say it had?

1: No Impact	2: Minimal Impact	3: Moderate impact	4: Strong Impact	5: Extreme Impact
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7. In the past have you ever had a supervisor, at a job or in school, which you would describe as a “micromanager”?

Yes	No
------------	-----------

8. Were your feelings about this supervisor more positive or more negative because of the behavior you characterize as “micromanaging”?

More positive	More Negative
----------------------	----------------------

9. Have you ever had a job where you felt that your contributions were observed and acknowledged by management?

Yes	No
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10. Have you ever had a job where you felt that hard work was rewarded?

Yes	No
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Appendix C

Treatment Integrity Datasheet

1. Did the assistant provide the correct scripted instructions?

Yes	No
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2. Did the researcher enter the room on-time within 3 seconds and stay for approximately 5 seconds (indicate for each instance of observation)?

Yes	No

3. Was a social validity questionnaire provided if applicable (only for a participant's last session)?

Yes	No
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4. If applicable, was the scripted explanation of each condition prior to a participant's choice of final condition given correctly?

Yes	No
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