

ABSTRACT

EVALUATION OF AN EXPERIMENTAL PROCEDURE TO EVOKE COUNTERCONTROL

One way an individual can control another person's behavior is through aversive consequences, such as threats of punishment. In behavioral research this is referred to as aversive control. Aversive control is widespread in our culture and its use is concerning because it frequently evokes negative side effects. Countercontrol is one of these negative side effects. Countercontrol is an operant response that is evoked by aversive control and that functions to punish the user of aversive control. In more precise terms, countercontrol is a response that is evoked by aversive control, and is strengthened when it reduces the future probability of aversive stimuli and produces a stimulus change that is positively reinforcing to the behaving person. This may take the form of acts of rebellion, revolution, protest, sabotage, and terrorism. Despite its potential social implications and impact, current countercontrol research is limited. The purpose of the current study was to evaluate the effectiveness of a procedure to evoke countercontrol within a simulated work situation. The study used an ABCDCD reversal design, and a total of 14 participants completed the procedure. Results indicated that the majority of participants did not engage in countercontrol, however, the procedure may have resulted in countercontrol responding by 3-6 participants. This finding has important implications for how future studies evaluate countercontrol given that some participants may respond but others may not due to different behavioral histories.

Miguel Angel Vieyra Ornelas
August 2018

EVALUATION OF AN EXPERIMENTAL PROCEDURE TO
EVOKE COUNTERCONTROL

by

Miguel Angel Vieyra Ornelas

A thesis

submitted in partial

fulfillment of the requirements for the degree of

Master of Arts in Psychology

in the College of Science and Mathematics

California State University, Fresno

August 2018

APPROVED

For the Department of Psychology:

We, the undersigned, certify that the thesis of the following student meets the required standards of scholarship, format, and style of the university and the student's graduate degree program for the awarding of the master's degree.

Miguel Angel Vieyra Ornelas
Thesis Author

Sharlet Rafacz (Chair) Psychology

Marianne Jackson Psychology

Steven Payne Psychology

For the University Graduate Committee:

Dean, Division of Graduate Studies

AUTHORIZATION FOR REPRODUCTION
OF MASTER'S THESIS

 X I grant permission for the reproduction of this thesis in part or in its entirety without further authorization from me, on the condition that the person or agency requesting reproduction absorbs the cost and provides proper acknowledgment of authorship.

 Permission to reproduce this thesis in part or in its entirety must be obtained from me.

Signature of thesis author: _____

ACKNOWLEDGMENTS

I would like to acknowledge several individuals that have helped me through this process. First and foremost, I would like to thank Dr. Rafacz for serving as the chair on my thesis. Words can't describe how grateful I am for all your hard work; it has truly been a long journey. I couldn't ask for a better mentor to help guide me through my graduate studies. You have made me into a better student, researcher, writer, and person. Thank you for encouraging me to pursue this research and not allowing me to give up on my idea along the way. I would also like to thank Dr. Jackson and Dr. Payne for taking time to be on my thesis committee as well as providing me with feedback that bettered my study.

I would like to thank my research assistants, Mitch and Seth for all the hard work they have invested in my thesis. I know it was frustrating when participants wouldn't show up, but thank you so much for staying with me. I truly appreciate your excellent acting skills.

My thesis would not be what it is if not for all the help my lab members have given me. Thank you for listening through my many presentations and always providing much needed feedback. A special thank you goes out to Kian who from the very beginning helped me develop my idea and document.

Finally, I would like to thank my family, friends, Rebeca and Jennifer for supporting me through this process. Con todo mi corazon, gracias Rebeca, you have been there from the very beginning and you have never given up on me. You have been my rock and I hope I made you proud. This accomplishment is as much yours as it is mine.

Thank you everyone and enjoy all your hard work!

TABLE OF CONTENTS

	Page
LIST OF TABLES	vii
LIST OF FIGURES	viii
CHAPTER 1: INTRODUCTION	1
CHAPTER 2: LITERATURE REVIEW	4
Aversive Control and Countercontrol	4
Countercontrol Research	10
Current Study	15
CHAPTER 3: METHODS	17
Participants and Setting	17
Training Procedures	17
Independent Variable	18
Experimental Design	19
Experimental Procedures and Conditions	19
Experimental Task	19
Data Collection	23
Procedural Fidelity	24
Debriefing and Post Survey	25
CHAPTER 4: RESULTS	26
Possible Countercontrol via Decreased Accuracy	26
Mixed Explanations for Decreased Accuracy	34
Possible Negative Reinforcement Effect	40
Post-Study Survey	42
CHAPTER 5: DISCUSSION	44
Limitations	46

Future Research.....	48
REFERENCES	50
APPENDICES	54
APPENDIX A: RECRUITMENT FLYER.....	55
APPENDIX B: INFORMED CONSENT	57
APPENDIX C: AVERSIVE STATEMENTS.....	60
APPENDIX D: TASK.....	62
APPENDIX E: STARTING INSTRUCTION SCRIPTS	64
APPENDIX F: DEBRIEFING	75
APPENDIX G: POST-STUDY SURVEY	78
APPENDIX H: NO EFFECT RESULTS.....	83

LIST OF TABLES

	Page
Table 1 <i>Overall Post-Study Survey Results</i>	43

LIST OF FIGURES

	Page
<i>Figure 1.</i> Example of possible countercontrol by participant 11.....	28
<i>Figure 2.</i> Example of possible countercontrol by participant 11.....	28
<i>Figure 3.</i> Types of errors made during session 14.....	29
<i>Figure 4.</i> Example of possible countercontrol by participant 3.....	30
<i>Figure 5.</i> Example of possible slight countercontrol by participant 3.....	31
<i>Figure 6.</i> Example of possible countercontrol by participant 9.....	33
<i>Figure 7.</i> Example of slight countercontrol by participant 9.....	33
<i>Figure 8.</i> Example of possible countercontrol.....	35
<i>Figure 9.</i> Example of possible counterattack by participant 12.....	37
<i>Figure 10.</i> Example of possible countercontrol by participant 4.....	39
<i>Figure 11.</i> Example of negative reinforcement by participant 2.....	41

CHAPTER 1: INTRODUCTION

Manipulating consequences is a key component in changing operant behavior. These consequences can be divided into five types: positive reinforcement, negative reinforcement, positive punishment, negative punishment, and extinction. The former two increase behavior while the latter three decrease behavior. Of these consequences, positive reinforcement is distinct because it does not primarily rely on aversive stimulation to change behavior. In contrast, negative reinforcement involves the removal of an aversive stimulus and positive punishment uses aversive stimulation to decrease behavior. Negative punishment involves the removal of a positive reinforcer contingent on a specific response occurring. The removal of a positive reinforcer can be an aversive event, such that emotional responses are elicited and responding decrease. An extinction procedure decreases the rate of a response by preventing, or withholding, the maintaining consequences from occurring; the procedure itself is aversive. Indeed, the term aversive control refers to the use of negative reinforcement and punishment, both positive and negative, to change and maintain behavior (Hineline, 1984; Pierce & Cheney, 2013). Behavioral methods of control that manipulate consequences, therefore, are either based on positive reinforcement or aversive control.

Skinner (1953, 1971) was not an advocate for aversive control and often recommended that behavioral methods of control solely be based on positive reinforcement because they would strengthen desired behavior. Additionally, methods of control utilizing positive reinforcement produce fewer negative side effects as compared to aversive control (Skinner, 1971). Aversive control may produce more negative side effects, but in certain situations it is the only alternative. For example, treating self-injurious behavior with punishment

(Doughty, Poe, & Anderson, 2009). Unwanted negative side effects is one of the three main concerns with the use of aversive control (Skinner, 1971). In addition, aversive control is concerning because it is highly prevalent in our environment, and there is little research about it.

Within the American culture, aversive control is prevalent across different areas and systems. For example, in the U.S. school systems, teachers often rely on punitive methods to control students' behavior (Sugai & Horner, 2006). In addition, America's criminal justice and penal systems operate under the rational that incarceration will deter and lower crime (Skinner, 1953). Finally, in the business sector, organizations often utilize hierarchical structures which tend to support aversive control (e.g., write-ups or threats of termination) (Hantula, 2015).

This prevalence is particularly concerning given that the use of aversive control may evoke negative side effects, such as countercontrol. As commonly defined, countercontrol is an operant response that is evoked by aversive control, and that either delays a reinforcer or punishes the user of aversive control (Skinner, 1953). The topography of countercontrol varies, and such acts of vandalism, sabotage, protest, rebellion, and terrorism may be examples of countercontrol (Delprato, 2002; Mace, 1994). The high prevalence of aversive control in our culture increases the likelihood that countercontrol will occur; this is particularly the case as aversive control becomes much more conspicuous and detrimental.

Most of the experimental research on the negative side effects produced by aversive stimuli was done in the 1970s (Pierce & Cheney, 2013). The scarcity of experimental research is concerning because it has hindered the development of methods to effectively manage the negative side effects, including countercontrol. Research on countercontrol has largely remained conceptual. A few applied

studies have referenced countercontrol as post hoc explanations for different behavioral phenomenon (Ludwig & Geller, 1997; Mawhinney & Fellows-Kubert, 1999). Despite the widespread use of aversive control and potential risks countercontrol presents, a practical understanding of countercontrol and its controlling variables remains unknown.

As such, developing an effective research procedure to analyze the controlling variables of countercontrol is important so that functional relationships between the behavior and the environment can be identified (Mace, 1994). These functional relations can then be used to develop methods to manage countercontrol effectively. Organizations, such as businesses, stand to benefit from such treatment methods considering they frequently utilize and rely on aversive contingencies to manage the behavior of its members (Hantula, 2015; Skinner, 1953). Furthermore, organizations are likely to continue using aversive control since it tends to be immediately effective and less effortful than other methods of control, such as establishing and maintaining a token economy. Reducing aversive stimulation in work settings is then, an unlikely possibility. An effective method to manage countercontrol may have the benefits of reducing behavioral issues, such as employees' low performance or decreased job satisfaction, and increasing employees' discretionary effort (Hantula, 2015).

CHAPTER 2: LITERATURE REVIEW

Aversive Control and Countercontrol

Skinner (1953, 1971) discussed the control found in our society and made a distinction between environmental and social control. The former refers to when natural conditions change behavior. For example, the hot sun makes escape from its rays reinforcing, as such a person moves to a shady area. Social control refers to when people deliberately use consequences to change others behavior. Skinner (1953, 1971) elaborated that in our society, social control often means that people use aversive stimuli to induce people to behave a certain way. Skinner called this type of social control aversive control.

Aversive control relies on aversive stimuli to produce behavior change. Skinner (1971) explained that people could treat others aversively because of the consequence that follows. For example, a parent criticizes a child until they clean their room. For the parent, the use of aversive stimuli was reinforced because it produced the desired behavior change. For the child, the parent's criticism establishes a negative reinforcement contingency in which the child cleans their room to escape the aversive stimulus. Skinner (1953, 1971) indicated that most social agencies (e.g., religion, government, education, economics) utilize aversive control to change people's behavior.

Skinner (1953, 1971, 1974) opposed the use of aversive control because it involved the use of aversive stimuli that were detrimental to people, (e.g., bodily harm, threats, or confinement), did not strengthen the desired behavior, and produced negative side effects. Instead, Skinner advocated that methods of control solely be based on positive reinforcement because they do not have the disadvantages of aversive control. Various researchers support Skinner's position

(Biglan, 2015; Chance, 1998; Cooper, Heron, & Heward, 2007), but everyone does not agree. Frederiksen and Perterson (1977) and Balsam and Bondy (1983) showed that positive reinforcement produces negative side effects similar to those generated by negative reinforcement. It may be the case that methods of control based on positive reinforcement do generate negative side effects, but that these effects may be inconspicuous or subside quickly. As a result, the idea that positive reinforcement is free from negative side effects persists.

Skinner (1953, 1971) explained that when a person uses aversive control to change another's behavior, that individual can escape or avoid further aversive stimulation by behaving in the manner prescribed by the user of aversive control, or they can countercontrol. For example, a teacher threatens detention unless a student turns in their homework, the student can then escape the threat by turning in their homework, or they can engage in some response that is aversive to the teacher, such as making obscene gestures during detention. Skinner (1953) defined countercontrol as an operant response that is evoked by aversive control and that either punishes or delays a reinforcing consequence for the user of aversive control. Skinner's description, however, is conceptually imprecise. A more behavioral description is that countercontrol is an operant response that is evoked by aversive control, reduces the frequency or intensity of the aversive stimulation, and also produces a stimulus change that is positively reinforcing. If the student in the prior example makes obscene gesture solely because it has previously reduced detention, then it would not be countercontrol, but escape and avoidance behavior. However, if the student engages in the behavior because it also resulted in the teacher being distraught, and this stimulus change is positively reinforcing for the student, then it would be countercontrol. It is this dual function that distinguishes countercontrol from other escape and avoidance behavior.

According to Skinner's (1953) conceptual account, there are three specific conditions that make countercontrol more likely to occur. First, the presence of social aversive control, which refers to an interaction between two or more people and the use of aversive stimulus by one person to change the behavior of another. Second, the intensity of the aversive stimulus; the higher the intensity, the more countercontrol is likely to occur. Lastly, the saliency of the aversive control contingency. the more salient the contingency, the more likely countercontrol is to occur.

Aversive control is distinct due to the use of aversive stimuli, and the likelihood of countercontrol is related to the intensity of the aversive stimuli present. Aversive stimuli are categorized as either unconditioned or conditioned. Things such as extreme heat or cold and electric shock are unconditioned aversive stimuli that an organism will biologically move away from (Pierce & Cheney, 2013). While in general, pain inducing events are unconditioned aversive stimuli, this may not always be the case. Morse and Kelleher (1977) found that squirrel monkeys would repeatedly press a lever that would deliver electric shocks which functioned as a positive reinforcer rather than an unconditioned aversive stimulus. Stimuli or events such as verbal disapproval, receiving a failing grade, or experiencing criticism are examples of conditioned aversive stimuli (Pierce & Cheney, 2013). However, verbal disapprovals may function as a positive reinforcer for behavior maintained by attention, such as in the case of sadomasochism. Aversive stimuli, therefore are commonly assumed to be anything that is displeasing. However, the defining feature of aversive stimuli is its suppressing effect on the preceding behavior (Michael, 1993). Aversive control relies on this suppressing effect to change peoples' behavior, and when it is the only form of control, it will likely evoke countercontrol.

Countercontrol is also more likely to occur when aversive control is more salient. Delprato (2002) discussed social aversive control as a conditioned establishing operation (CEO) that makes escape or avoidance temporarily more reinforcing. In addition, Michael (1993) described emotional EOs as aversive events that establish aggression as a reinforcing consequence. Lewon and Hayes (2014) also suggested that the antecedent events that are correlated with subjective feelings called emotions or moods are the same events that function as motivating operations, (MO) and that these alter the effectiveness of particular stimuli as reinforcers or punishers. Laboratory studies have supported these positions and shown that both humans and animals will aggress towards nearby organisms after experiencing an aversive event (Azrin, Hutchinson, & Hake, 1963; Frederiksen & Peterson, 1977; Kelly & Hake, 1970). Furthermore, it seemed that injuring or damaging this nearby organism was positively reinforcing for both humans and animals. Aversive control may, therefore, function as an MO, if it is conspicuous such that countercontrol temporarily becomes an effective reinforcing consequence for the individual that is experiencing aversive control. Conversely, complying with an aversive control contingency may then be less reinforcing.

Skinner's (1953, 1971) conceptual account of countercontrol describes three response topographies, counterattack, passive resistance, and escape. These topographies share similarities with operant aggression, learned helplessness, and other escape responses. However, countercontrol is functionally different from these responses.

Counterattack

Counterattack involves the use of force, often aggression, to terminate aversive controlling attempts. The escape from aversive stimulation and reduction

in the future probability of an aversive stimulus, reinforces counterattack. Additionally, the response produces stimulus changes that are positively reinforcing to the person making the response. For example, seeing their overbearing manager in pain or distress may be reinforcing to the counterattacking employee. Furthermore, counterattack is commonly accompanied by strong emotional reactions. Counterattack can take the form of rebellion, revolution, murder, and even terrorism (Delprato, 2002; Mace, 1994; Skinner, 1953). While there is no experimental literature specifically investigating counterattack, aggression has been the focus of several lines of research. Elicited aggression, also known as respondent or reflexive aggression, is a well-documented side effect of aversive stimuli. It involves instances of aggression following the experience of a painful stimulus. For example, Azrin et al. (1963) were able to make two squirrel monkeys lunge and aggress towards each other following the delivery of electric shocks. Similar results were seen with rats and other pairs of primates (Ulrich & Azrin, 1962). The main difference between elicited aggression and countercontrol is that the former is respondent behavior while the latter is operant. Elicited aggression is controlled by antecedent stimuli while counterattack is maintained by its consequences.

Aggression has also been induced by manipulating various features of the reinforcement schedule. Kelly and Hake (1970) found that juveniles would increase their cushion punching during periods of extinction that followed a fixed-ratio 200 schedule of reinforcement. Similar results were found with young children (Frederiksen & Peterson, 1974) and college students (Ulrich, Dulaney, Arnett, & Mueller, 1973). Harrell and Ross (1974) found that children punched a Bobo doll at a higher rate when a fixed-ratio 200 schedule was in effect, as compared to a fixed-ratio 50 schedule. While extinction and abrupt, or large ratio

changes may induce aggression, they do not appear to be relevant variables that evoke counterattack. Countercontrol, including counterattack, is a social phenomenon and schedule-induced aggression is not since instances of aggression are not directed towards the punishing agent.

Operant aggression is also topographically similar to counterattack. Operant aggression occurs in response to punishment because such behavior has previously allowed an organism to neutralize or escape the source of aversive stimulation (Azrin & Holz, 1966). The topography of operant aggression and counterattack are very similar; however, there is a functional difference between them. Both operant aggression and counterattack are escape and avoidance responses. However, counterattack is also strengthened because it produces a physical change (e.g., physical damage or emotional distress) on the part of the controller, the sight of which is positively reinforcing for the controllee. Operant aggression lacks this positive reinforcement component.

Passive Resistance

An additional countercontrol topography is passive resistance. Passive resistance refers to reducing the future probability of an aversive stimulus by delaying or withholding a positive reinforcer for the punishing agent. This also produces stimulus changes that are positively reinforcing to the person making the response. However, unlike counterattack, passive resistance does not produce physical injury. Examples of passive resistance are, protests, strikes, and labor slowdowns (Delprato, 2002; Skinner, 1953). In the case of a strike, employees withhold their labor because of the unfair working conditions imposed by their employer, who requires their labor. The strike reduces the likelihood that the employer will continue unfair labor practices in the future and causes financial

damages to the employer, which may be reinforcing to the striking employees. Learned helplessness is topographically similar to passive resistance. For example, Seligman and Maier (1967) found that dogs first exposed to inescapable shocks would fail to learn an escape response in subsequent conditions. These dogs would endure the shocks instead of attempting to escape them (i.e., escape extinction). Learned helplessness and passive resistance are similar in that both are responses to aversive stimuli. However, they differ in that passive resistance is an escape or avoidance response, while learned helplessness is not, but is more likely related to extinction.

Escape

The final countercontrol response is escape, which involves a person escaping or moving out of range of controlling attempts. Escape countercontrol is like other escape responses in that it terminates aversive stimuli. However, it differs because the escape response is aversive to the person using aversive control, which also positively reinforces the escape response. For example, an employee may resign from an overly punitive organization during its busy season because doing so will damage the organization. Examples of escape within the literature include dropping out of school, religious apostasy, and desertion (Delprato, 2002; Skinner, 1953).

Countercontrol Research

The majority of research about countercontrol is conceptual. Skinner (1953, 1971) was first to define and develop the concept of countercontrol. Skinner frequently discussed countercontrol's role in our society and cultural design. While Skinner's works continue to be the richest source of research about countercontrol, several other researchers have recently added to its conceptual

works. Fawcett (1991) advocated that applied research should expand their focus to address new forms of community research and action. In responses to Fawcett's article, Miller (1991) discussed how the field of applied behavior analysis could minimize instances of countercontrol. Mace (1994) highlighted countercontrol as a seldom researched area that could yield significant findings and further the scientific understanding of behavior. Delprato (2002) provided the most recent and comprehensive review of countercontrol. Lastly, Sidman (2001) provided a behavior analytic account of coercion and its use in our culture.

Several recent applied studies discussed countercontrol. However, these studies investigated other behavioral phenomena and only indirectly examined countercontrol. For example, Ludwig and Geller (1991, 1997) conducted a set of studies with pizza delivery drivers to improve their safe driving behavior. In the first study, Ludwig and Geller (1997) compared assigned versus participative goal setting, with the aim to increase full intersection stops. They used a quasi-experimental multiple baseline design across settings with a non-equivalent control group. Although not targeted by the intervention, safety belt and turn signal use were also measured to evaluate generalization. An analysis of the group data showed that the intervention increased full intersection stops for both treatment groups. More relevant to the current discussion, the results also indicated that for the assigned goal setting group, the intervention decreased turn signal use while the opposite was true for the participative goal setting group. Ludwig and Geller (1997) hypothesized that countercontrol may have contributed to this decrease in turn signal use because assigned goal setting was more aversive than participative goal setting.

Ludwig and Geller (1999) then used a similar quasi-experimental research design to evaluate the effects of a company policy statement on drivers' turn

signal use. Similar to their previous study, they measured a non-targeted response, which in this case was safety belt use. The policy statement, written on drivers' paychecks, informed them that it was company policy to use their turn signal when making turns. The policy statement was given to drivers with their normal bi-weekly paychecks. The intervention increased turn signal use for both treatment groups. However, the statements also decreased the non-targeted response of safety belt use for both groups.

This may have been a situation in which the controller established contingencies in their favor (i.e., the organization) which appeared to be at the expense of the controlee (i.e., the employee) and may have evoked countercontrol (Skinner, 1971). Indeed, both studies by Ludwig and Geller (1997, 1999) reference countercontrol as a reason for the unexpected changes in non-targeted responses. The interventions targeted safe driving behavior, as such the delivery drivers could not countercontrol with the targeted response because doing so may have resulted in negative financial consequences. Because of this, Ludwig and Geller suggested that drivers countercontrolled with other responses within the same response class of safe driving (i.e., decreased turn signal and safety belt use). While Ludwig and Geller's conclusion is possible, it's hard to confirm that this was the case for any particular driver since they used group data. Additionally, the targeted and non-targeted responses were measured as probes for each condition and not as a continuous measure, which introduces other confounding variables to their analysis. Furthermore, they did not directly examine countercontrol or its controlling variables; rather their explanation was a post hoc conclusion based on non-predicted behavior patterns.

Another study that utilized post hoc analysis is Mawhinney and Fellows-Kubert's (1999) study that was focused on improving the performance of

telemarketers. They used a multiple baseline design with a reversal, to compare the effects of a quota system versus an interdependent group contingency and a lottery. Since the quota system was already in place, it was the first condition; it required telemarketers to make 36 calls per day, otherwise their pay would be negatively impacted. In the intervention condition, the quota system was modified by adding a group contingency and a lottery. Telemarketers earned daily raffle tickets for every ninth call they made and one ticket for every call above their quota. However, lottery tickets were only valid if the entire group made 250 calls that day. The raffle was held at the end of the week and the winners received prizes, such as a large flat screen TV. The intervention was removed after a week, and the quota system restored. Group data showed that the group contingency and lottery increased the number of calls made per day relative to the quota system alone.

However, group data initially obscured the performance of two telemarketers who may have engaged in countercontrol. In group B, telemarketers 4 and 6 were unaffected by the intervention, even though their group members all increased their performance. Through most of the study, their calling behavior was drastically lower than the rest of the group. Telemarketers 4 and 6 did increase their performance, which tracked more closely to their group, but this occurred towards the end of the study. Mawhinney and Fellows-Kubert (1999) hypothesized that the quota system functioned as a conditioned aversive stimulus that telemarketers 4 and 6 countercontrolled against. However, like the Ludwig and Geller studies, controlling variables were not systematically manipulated to verify that the behavior was indeed an instance of countercontrol.

Boren and Colman's (1970) study with patients from a psychiatric ward provides the best demonstration of countercontrol. Boren and Colman (1970)

conducted four different experiments as a way of demonstrating to the facility's staff that behavioral procedures could be an effective way to manage their patients' behavior. Countercontrol was related to their second experiment, which involved the use of punishment to increase attendance at daily morning meetings. Boren and Coleman (1970) utilized a token economy, established in experiment 1, to differentially reinforce attendance with points. This intervention had minimal effects, as many patients continued to stay in their beds instead of attending the meeting. Boren and Colman (1970) then instituted a 10-point fine for anyone seen staying in bed instead of going to the morning meeting. The fine had a dramatic negative effect on attendance and patients' behavior, to the extent that the staff requested the fine be removed after only a week of implementation. Specifically, the data showed that attendance during the initial token economy averaged 70%. The first day the fine was implemented, attendance decreased to 50%. On the second day, attendance fell to 0%, which had never occurred in the history of the ward. Attendance steadily increased in the following days to a high of 60%; however, this was still below the baseline level. Staff observations of patient behavior during the second day of the fine exemplify countercontrol, all of the patients were seen in bed during the morning meeting while some patients were seen ordering men back into bed and whispering rebellion. Additionally, rule infractions, fighting, and absence without leave (AWOL) increased. Four patients went AWOL that week, whereas none had done so the previous week. It appeared that the patients' behavior changed due to the implementation of the fine, since the attendance level and reported behavior issues returned to near baseline levels once removed.

Several factors may have contributed to the results, and may help explain the patients' response to the fine. All of the patients were soldiers diagnosed with

character and behavior disorders, which may suggest that they had a history of countercontrol. The 10-point fine was effectively a negative punishment contingency which evoked countercontrol responses. An analysis of the data seems to confirm this since the behavior of the patients' match Skinners description of possible countercontrol topographies. Patients counterattacked by fighting and breaking the rules, escaped by going AWOL, and passively resisted by staying in bed. Although it appears that patients did engage in countercontrol, the conclusion is based on anecdotal accounts. It is noteworthy, however, that this is the only study that demonstrated a reversal of countercontrol behavior when the negative punishment contingency was removed.

Current Study

The basic research field is very limited in regards to countercontrol and the use of aversive stimuli. Almost all of the basic research on the effects of punishment and negative reinforcement are derived from the 1960s and 1970s. Since then, research concerning aversive control has virtually stopped (Pierce & Cheney, 2013). Ethical concerns and procedural limitations have played a role in the shortage of basic research. In addition, early non-human animal studies on punishment and negative reinforcement had shown that non-human animals do not engage in countercontrol. Considering Skinner's conceptual account, it is possible that only humans engage in countercontrol due to their highly-developed verbal abilities which enables them to make rules about how their behavior affects others. Although applied researchers stand to gain more from a better understanding of countercontrol, such insight will require basic research that focuses on its controlling variables.

The purpose of the current study was to evaluate the effectiveness of an experimental procedure to evoke countercontrol in an analogue work environment. The study was designed such that its conclusions would contribute to the basic understanding of countercontrol and be applicable in organizational settings. Specifically, the procedure used similar conditions as those found in work settings, such that the conclusions derived from the procedure would provide organizations with information that can help them prevent or respond more effectively to instances of countercontrol.

CHAPTER 3: METHODS

Participants and Setting

14 participants were recruited from a local university by posting flyers (see Appendix A) on campus, and distributing them in classes. All participants were 18 years or older. Institutional Review Board (IRB) approval was obtained before beginning the study, and all participants signed the informed consent form provided to them (see Appendix B).

Sessions took place in a small office room located on the university campus. The room contained a table, chairs, a laptop, a timer, and was equipped with a small camera for video recording. The experimenter performed the initial training session while two research assistants (RAs) conducted the subsequent experimental sessions. During the experimental sessions, the participants were seated at a desk. At the beginning of the conditions, an RA entered the room, read experimental scripts, and exited the room. The experimenter monitored participants' performance through the live video feed that was sent to his computer outside of the room.

Training Procedures

During training, the experimenter passed out and vocally reviewed the informed consent form with participants. The experimenter also reviewed the data entry task with participants, assigned them user IDs and passwords, modeled how to complete the task, trained participants to 70% accuracy, and had all of their questions answered.

Also during the initial training, the experimenter told participants that the purpose of the study was to evaluate the managerial ability of the RAs. The experimenter explained that the RAs had just completed a managerial training, and

that the purpose of the study was to determine whether the managerial abilities of the RAs improved. Furthermore, the experimenter explained that in the future, the RAs would receive a performance score that would be based on participants' performance on a work task; more specifically, their accuracy and timeliness. The experimenter emphasized that the better the participant performed, the higher the score that an RA would receive. Conversely, the poorer the participant performed, the lower the score that an RA would. The experimenter also explained that their performance would only affect the manager that began the condition. It was necessary to disguise the true purpose of the study because participants may have changed their behavior had they known that the focus was countercontrol. Additionally, the RAs were confederates, such that they strategically delivered the aversive statements (independent variable intended to evoke countercontrol responding) and apologetic statements (intended to reverse countercontrol responding).

Independent Variable

Vocal verbal aversive statements (see Appendix C), delivered by the RAs, were used to evoke countercontrol. Statements for the current study were selected because they might be commonly observed in an organizational setting. An initial list of possible statements was generated by using a basic search engine (e.g., Google or Yahoo) to search the phrase "top ten things terrible bosses/managers say." The experimenter also reviewed websites and identified other frequently occurring statements. The experimenter then selected, and made some slight modifications, to the two that seemed most likely to evoke countercontrol.

Experimental Design

An ABCDCD reversal design was utilized. The order of the statements and RAs were counterbalanced across participants, and both are numbered to indicate their order of presentation. The experimental conditions included (A) baseline, (B) performance goal, (C) performance goal plus aversive statement, and (D) performance goal plus apologetic statement. As such, except for baseline, the performance goal was present in all conditions. There were two RAs and for any given participant, one was assigned to the aversive statement presentations and one to the apologetic statement presentations. Two RAs were used to improve the believability of the study and the likelihood that any countercontrol effects reversed.

Experimental Procedures and Conditions

All the conditions followed a similar format, with each condition composed of five sessions. Each session lasted 4 minutes, but participants could have ended them sooner. Participants had an optional 1-minute, and a mandatory 3-minute, break between sessions and conditions respectively. Taking the 1-minute break was at the participant's discretion while the 3-minute break was initiated by an RA. The study occurred over 2 days. Training and the first two conditions occurred on the first day. The remaining four conditions occurred on the second day. Each condition lasted between 20-25 minutes and the length of the study was approximately 1½ - 2 hours each day.

Experimental Task

The study utilized the same work task used by Johnson and Dickinson (2010), which involved processing simulated checks (see Appendix D). Participants processed simulated checks, with values ranging from \$10.00 to

\$10,000.00, which were presented on a computer screen. Participants entered the displayed values in a box at the bottom of the screen using the laptop's keyboard. Once they entered the value, participants pushed the enter key and proceeded to the next simulated check.

Baseline

The RA started the baseline condition by reading out loud the starting instructions (see Appendix E), which explained the work task. The participant then started the timer and began processing the simulated checks. The session ended once 4 minutes elapsed. The participant then decided to either take a 1-minute break or continue onto the next session. During the break, the participant remained in the room, and was free to move around the room and use their cell phone. If the participant waived their break, they restarted the time, opened the check processing task, started the timer, and continued processing checks. At the end of the fifth session, the other RA entered the room and informed the participant that they had a 3-minute break, during which they could leave the room. The baseline condition ended once the RA read the exit instructions (see Appendix E). This sequence was repeated for all conditions.

Performance Goal (PG)

This condition was the same as baseline except for the performance goal, which was introduced through a modified version of the starting instructions (see Appendix E). The performance goal was specific to the number of checks processed during a session, regardless of their accuracy. The performance goal for each participant was set as their average performance for their last two sessions of baseline. This calculation made the goal easy to meet and allowed for a more sensitive measure of countercontrol. The starting instructions informed

participants that they would earn a dollar for every session in which they met or exceeded their goal. During the 3-minute condition breaks, participants were told how much money they earned in their previous five sessions (i.e. during the condition). Participants didn't receive their compensation until the conclusion of the study.

There were three purposes for the performance goal. First, employees are paid for working, so the performance goal allowed this financial contingency to be simulated during the study. Second, participants were reinforced for meeting or exceeding their goals, as such, responding would likely maintain near goal level. This made the experimental procedure more sensitive to countercontrol because subtle changes were easier to detect from stable responding. Third, the performance goal functioned as a threshold for the intensity of countercontrol; more intense responses would result in participants forfeiting their session earnings. For example, if the individual significantly reduced their accuracy or quit prior to completing a session, it would have decreased the RA's score, but also would result in a loss of earnings for themselves.

Performance Goal Plus Aversive Statement (PG & AvS)

This condition incorporated an aversive statement as previously described (see Appendix E). Each statement was added to the starting instructions that were delivered at the beginning of the condition. No other aversive statement was delivered during the condition. There were two possible aversive statements and their order was counterbalanced across participants. The RAs delivered the statements as naturally as possible by modifying their body, facial, and vocal features to match the content of the statements.

The rationale for using these statements was that supervisors in organizations frequently use verbal statements to interact with their employees. Depending on the content or delivery of these statements, they can be aversive and alter employees' behavior such that their performance decreases or they may engage in inappropriate behavior (e.g. frequent breaks or engaging in gossip). For example, the verbal statement, "I don't pay you to think, just do your job," can change the reinforcing effectiveness of events such as supervisor's praise or feedback. Additionally, events that have previously punished the supervisor (e.g. employees leaving work early or make more mistakes), may have higher reinforcing values, thus employees engage in them more frequently. Given that students in the study likely had typical reinforcement histories, the verbal statements being delivered by the RA may function as aversive conditioned stimuli and as an EO (Delprato, 2002; Michael, 1993).

Performance Goal Plus Apologetic Statement (PG & ApS)

During this condition, an apologetic statement was added to the starting instructions in place of an aversive statement (see Appendix E). Similar to the aversive statement condition, the two possible apologetic statements were counterbalanced across participants. As with the aversive statements, the RA delivered the statements as naturally as possible, modifying their body, facial, and vocal features to match the content of the statements. The purpose of the apologetic statements was to allow for a reversal of the countercontrol conditions. Given the reinforcement histories of participants, it is likely that such apologetic statements would function as an abolishing operation (AO) that decreases the reinforcing effectiveness of escaping and punishing the RA. It follows that the

countercontrol responses would be reduced and responding would return to previous levels.

Data Collection

The work task (Johnson & Dickinson, 2010) was designed such that it automatically recorded the user's performance. The work task recorded the total number of checks processed, the number of correctly processed checks, and the duration of sessions.

A camera and timer were also used for data collection. As mentioned previously, a small camera was installed in the room and turned on during the experimental sessions. The experimenter viewed the video and audio feed on his computer while the session was occurring for the purpose of measuring procedural fidelity, session duration, and latency to response per session. Any collateral responses by participants, such as facial expressions, comments, or gestures in response to the aversive statements were noted.

Dependent Variables

Various performance qualities represented the different countercontrol topographies of counterattack, passive resistance, and escape. Counterattack was measured as the percentage of correct responses, or accuracy, made per session. A correct response was recorded when the participant typed the accurate value into the box at bottom of the screen. Significant decreases in accuracy during the aversive statement conditions compared to the other conditions, demonstrated counterattack.

Passive resistance was measured by calculating the rate of responses per session. The total number of responses emitted, regardless of accuracy, were divided by the total duration of the session, producing the rate of response. A

single response was counted when participants typed a value into the box. Duration was measured by the amount of time that elapsed between when the participant pushed the start and end program buttons. Decreases in rates of performance, during the aversive statement conditions, demonstrated passive resistance since timeliness was previously established in the starting instructions as important to the managers' performance score.

Passive resistance was also measured by recording the latency to respond per session. A timer was started once the participant opened the check processing task and was stopped once the participant began entering values. Longer latencies in this condition, which also decreased timeliness, is also indicative of passive resistance.

Escape was measured by the duration of sessions. For each session, the timer started once the participant pushed the start button and stopped when the end program button was pushed, or when 4 minutes elapsed. If the participant worked for the entire length of the session, the duration was recorded as 4 minutes. For any session in which the participant met, or exceeded their goal, the duration was also recorded as 4 minutes. As such, only for the sessions in which the participant failed to reach their goal was the duration recorded as is. When the participant met or exceeded their goal, regardless of session length, the RA's scores remained the same. However, when the participant failed to reach their goal and ended the session early, the RA's score was decreased.

Procedural Fidelity

The experimenter assessed procedural fidelity by monitoring the RAs' correspondence with the starting instruction scripts and aversive and apologetic statements (see Appendices C & E). The experimenter monitored correspondence

by viewing the live streaming camera footage. He also used a copy of the scripts/statements to follow along as the RA interacted with the participant, indicating any deviations with an X. Procedural fidelity was calculated as the percentage of correct correspondence. Procedural fidelity was recorded for 13 of the 14 participants and ranged between 95% and 100% correspondence with the scripts and 100% correspondence with delivery of the aversive statements.

Debriefing and Post Survey

At the end of the study, the experimenter conducted a debriefing procedure with each participant (Appendix F). The procedure consisted of revealing the true purpose of the study and explaining why the pretense was needed. Participants were asked if they experienced any negative side effects. If so, the experimenter reviewed and discussed these effects with them. The experimenter also provided participants with the contact information for campus counseling, the faculty advisor on the study, and the psychology department chair, should they have wished to discuss any negative side effects at a later time.

Participants were also provided with a post-study survey to assess their history with aversive control, propensity for countercontrol, and the believability of the study. The survey consisted of 16 questions and utilized a 5-point Likert scale (see Appendix G).

CHAPTER 4: RESULTS

A total of 14 participants completed the study. Three out of those 14 may have engaged in countercontrol following the introduction of the aversive statements, as evidenced by their changes in responding. Three other participants showed unusual responding that may indicate countercontrol. However, given extraneous variables, it was unclear whether the change in responding was indeed countercontrol. The remaining eight participants showed either no effect or possible negative reinforcement effects (see Appendix H). Specifically, of those eight participants, one showed clear negative reinforcement effects as indicated by increases in accuracy following the aversive statement. Ceiling effects may have prevented any of the remaining seven participants from showing similar results.

Although data were collected on rate, latency to respond, and duration, only accuracy will be reported. All participants consistently and gradually increased their rate, which was indicative of practice effects. Latency to respond was highly variable for all participants and showed consistently no effects. Participants also did not end any session early so duration remained high and stable. As such, accuracy was the only measure of countercontrol that showed changes in responding related to the statements. However, data on the frequency of total (accurate and inaccurate) responding will also be reported given that it is tied to the performance goal.

Possible Countercontrol via Decreased Accuracy

Figures 1-7 represent the data for participants 3, 9, and 11, all of which may have demonstrated countercontrol to some degree. Countercontrol effects were most noticeable for participant 11, and more subtle for participants 3 and 9.

Figure 1 shows the accuracy and frequency of total responding for participant 11. During baseline and the PG condition, accuracy was stable and remained between 96% and 100%. The frequency of total responding varied in baseline but steadily increased across both conditions, indicating a practice effect. Upon introduction of the aversive statement, accuracy decreased in the first session to 79%, and continued to decrease to a low of 34%, before increasing to 55%. Accuracy continued an increasing trend following the apologetic statement. Upon the introduction of the second aversive statement, the trend began to decrease and increase again during the second apologetic statement. This pattern may be indicative of countercontrol since accuracy varied based on introduction of aversive and apologetic statements. Frequency of total responding remained above performance goal levels, such that the participant earned the financial contingency. Total responding also co-varied with accuracy - such that when accuracy decreased, frequency of total responding increased. This inverse relationship between accuracy and total responding is seen for many of the participants.

Figure 2 shows the percentage correct and the number of errors per session for participant 11. During baseline and the PG condition, errors were at low levels throughout both conditions. The most errors participant 11 made per session was 2. However, after the introduction of the aversive statement, errors quickly increased to 15 and reached a high of 82 in session 14. Error rates then indicated a decreasing trend during apologetic statement conditions, or an increasing trend in the second aversive statement condition.

Further evaluation of within-session data by participant 11 (see Figure 3) illustrate that while some errors may have been accidental (e.g., flipping the order of digits, or placing the decimal in the wrong place), there were also many deliberate errors such as typing the same value for multiple consecutive checks.

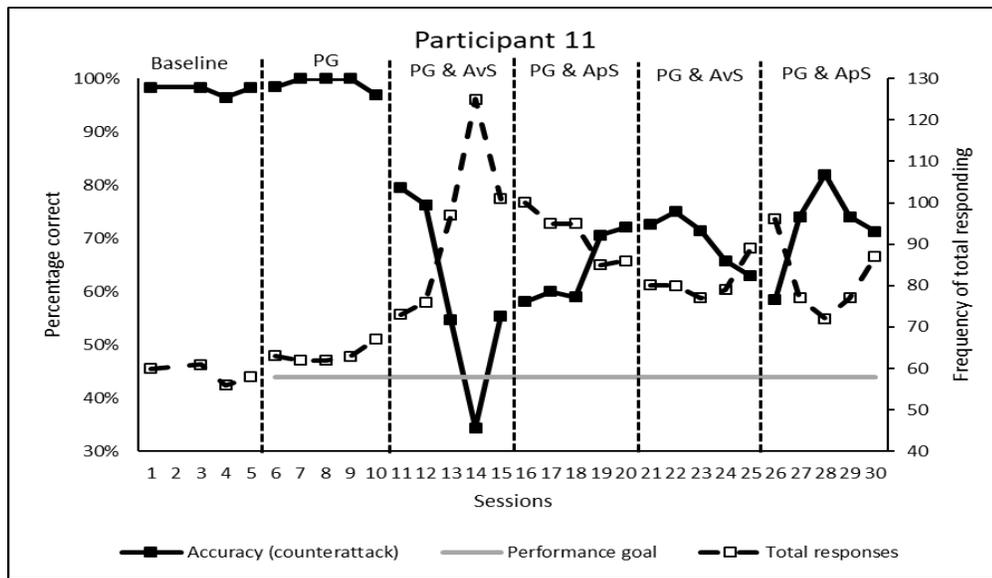


Figure 1. Example of possible countercontrol by participant 11.

Note: Counterattack is indicated by decreases in accuracy due to aversive statements. The percentage of correct responses is shown on the primary Y axis and corresponds to counterattack. The frequency of total response is on the secondary Y axis and the performance goal related to total responding is in gray. The different conditions include baseline, performance goal (PG), performance goal plus aversive statement (PG & AvS), and performance goal plus apologetic statement (PG & ApS).

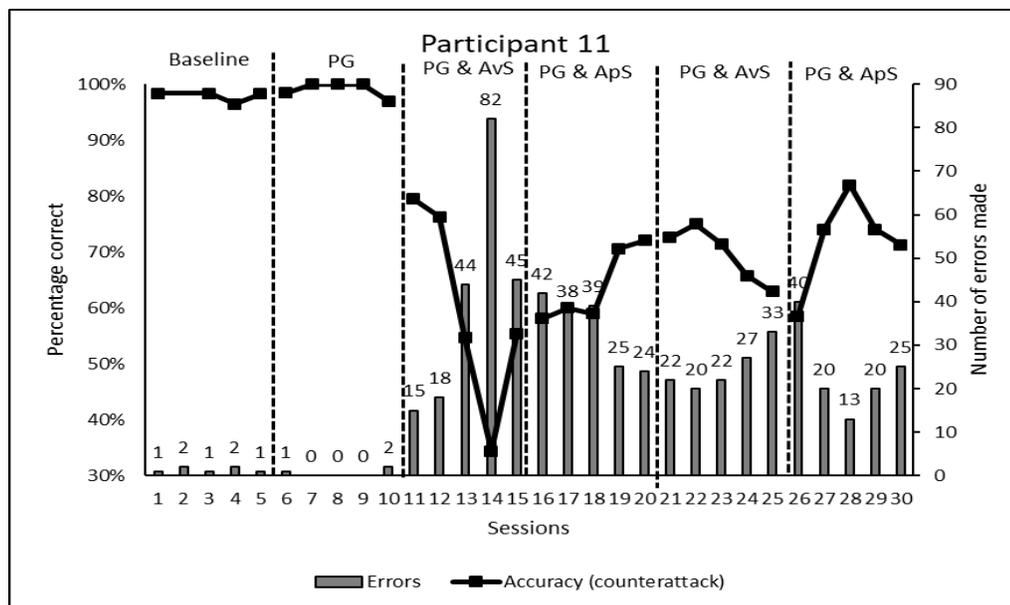


Figure 2. Example of possible countercontrol by participant 11.

Note: Figure indicates percentage correct (primary Y axis) and actual number of errors per session (secondary Y axis). The different conditions include baseline, performance goal (PG), performance goal plus aversive statement (PG & AvS), and performance goal plus apologetic statement (PG & ApS).

This consistent lack of correspondence between the value displayed and the entered value suggests that participant 11 was knowingly making errors.

SESSION 14 (1438)					
ID	LoginID	SessionID	CheckAmt	EnteredAmt	CorrectResponse
817605	405	1438	\$676.09	\$675.00	FALSE
817609	405	1438	\$732.99	\$732.00	FALSE
817610	405	1438	\$661.29	\$661.00	FALSE
817613	405	1438	\$775.99	\$44.00	FALSE
817614	405	1438	\$120.69	\$88.00	FALSE
817615	405	1438	\$294.80	\$88.00	FALSE
817616	405	1438	\$878.42	\$393.00	FALSE
817617	405	1438	\$697.82	\$84.00	FALSE
817618	405	1438	\$674.48	\$4.00	FALSE
817619	405	1438	\$893.08	\$4.00	FALSE
817620	405	1438	\$472.16	\$49.00	FALSE

Figure 3. Types of errors made during session 14.

Note: The amounts displayed during the sessions are in the column CheckAmt. The amounts entered by participant 11 are in the column EnteredAmt. FALSE indicates an incorrect response.

However, participant 11's verbal report during the debriefing did not correspond with her performance on the experimental task. Indeed, participant 11 reported that she did not countercontrol, however, the within and between-session data suggest otherwise. In addition, in the post-study survey for item 5, "I changed my performance to get back at the managers for making negative comments" and item 7, "When someone says negative things, I want to get back at them," participant 11 responded neither agree nor disagree. Her verbal report and survey results both disagree with her performance, which suggests that either she was unable to accurately tact her behavior or deliberately lied.

For participant 3 (see Figure 4), accuracy was consistently high during baseline and the PG condition (PG) as it maintained between 93% and 100%. Following intervention, accuracy initially maintained near 100% but then decreased abruptly to 88% during the last session, which was well below previous

levels. Following the apologetic statement, accuracy varied but returned to baseline levels. After the second aversive statement, accuracy changed into slight descending trend which became more level and variable following the second apologetic statement. These changes may be indicative of countercontrol since accuracy decreased slightly following the aversive statements. The frequency of total responding continued an increasing trend following the first aversive statement condition, and then was stable before becoming variable during the final condition.

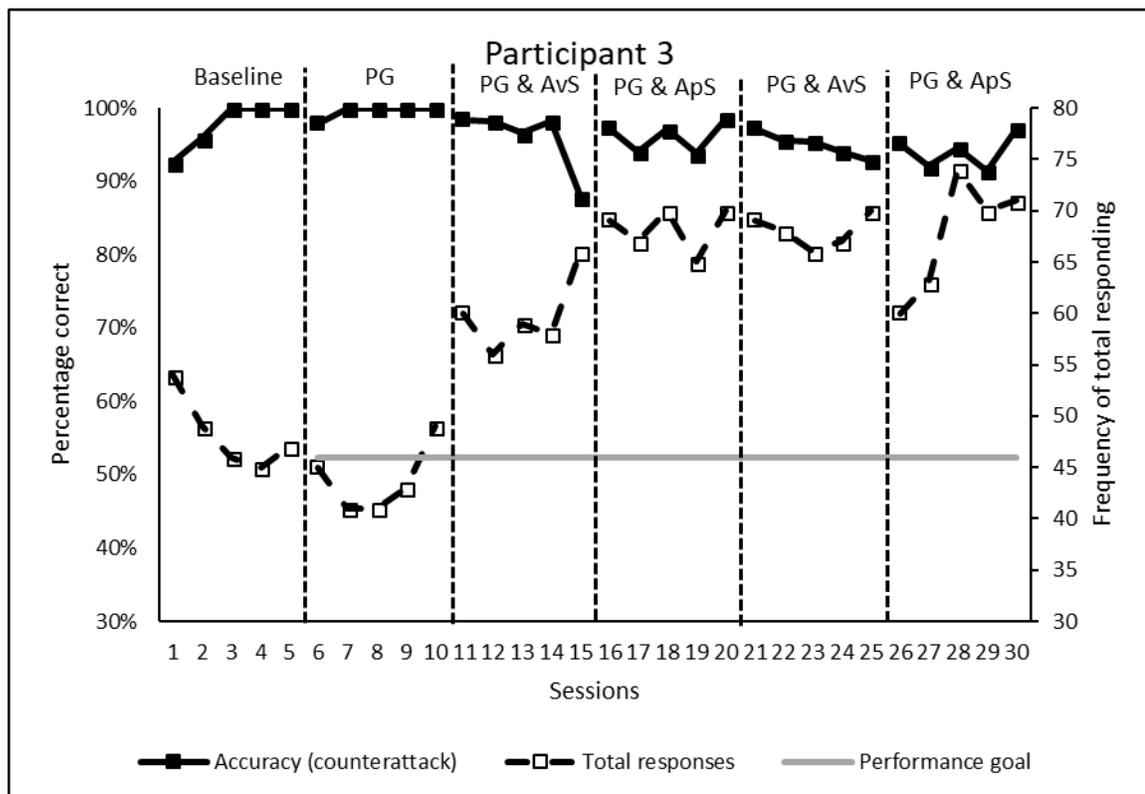


Figure 4. Example of possible countercontrol by participant 3.

Note: Counterattack is indicated by decreases in accuracy due to aversive statements. The percentage of correct responses is shown on the primary Y axis and corresponds to counterattack. The frequency of total response is on the secondary Y axis and the performance goal relating to total responding is in gray. The different conditions include baseline, performance goal (PG), performance goal plus aversive statement (PG & AvS), performance goal plus apologetic statement (PG & ApS).

Figure 5 demonstrates participant 3's accuracy percentage and the number of errors made per session. During baseline and PG conditions, errors remained at a low level. The number of errors doubled during the final session of the first aversive statement condition and returned to previous levels following the apologetic statement. After the second aversive statement, errors changed to an increasing trend and then varied during the last apologetic statement condition.

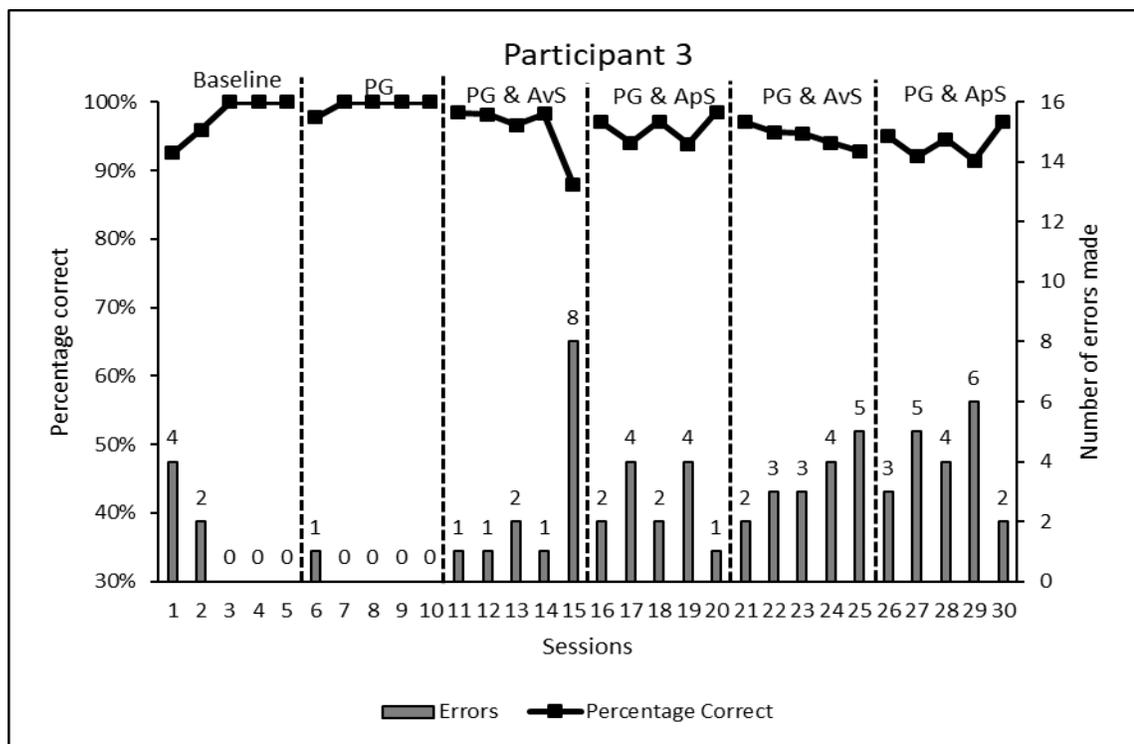


Figure 5. Example of possible slight countercontrol by participant 3.

Note: Figure indicates percentage correct (primary Y axis) and number of errors made (secondary Y axis). The different conditions include baseline, performance goal (PG), performance goal plus aversive statement (PG & AvS), performance goal plus apologetic statement (PG & ApS).

Although not as pronounced as the previous participant, the between session data of participant 3 may indicate that countercontrol occurred briefly - primarily during the last session of the first aversive condition. During debriefing, the participant appeared surprised when the true purpose was revealed, but

otherwise made little comment. In response to survey item 5, “I changed my performance to get back at the managers for making negative comments” and item 7, “When someone says negative things, I want to get back at them,” participant 3 selected “more agree than disagree.” As such, though his accuracy only briefly decreased, his survey results further indicate countercontrol behavior.

Figure 6 shows the accuracy and frequency of total responding for participant 9. During baseline and the PG condition, accuracy varied but maintained at a high level, while the frequency of total responding increased steadily across both conditions (indicating a practice effect). Following intervention, accuracy began a descending trend before increasing in the latter two sessions. After the first apologetic statement, accuracy returned to the previous high level and began a descending trend. This trend seemed to stabilize after the second aversive statement and remained at approximately the same levels during the second apologetic statement. The frequency of total responding remained above the goal level and maintained a consistent level during the final four conditions. Changes in responding following the first aversive and apologetic statements may be indicative of countercontrol given that accuracy varied based on the introduction of these statements. However, this finding wasn't replicated in subsequent conditions.

Figure 7 shows participant 9's accuracy percentage and the number of errors made per session. During baseline and the PG condition, the number of errors varied and ranged between 0 and 6. Following intervention, the number of errors doubled for two consecutive sessions and then decreased to previous levels. The number of errors then decreased to 0 following the first apologetic statement, before gradually increasing, and remaining variable across the remaining conditions.

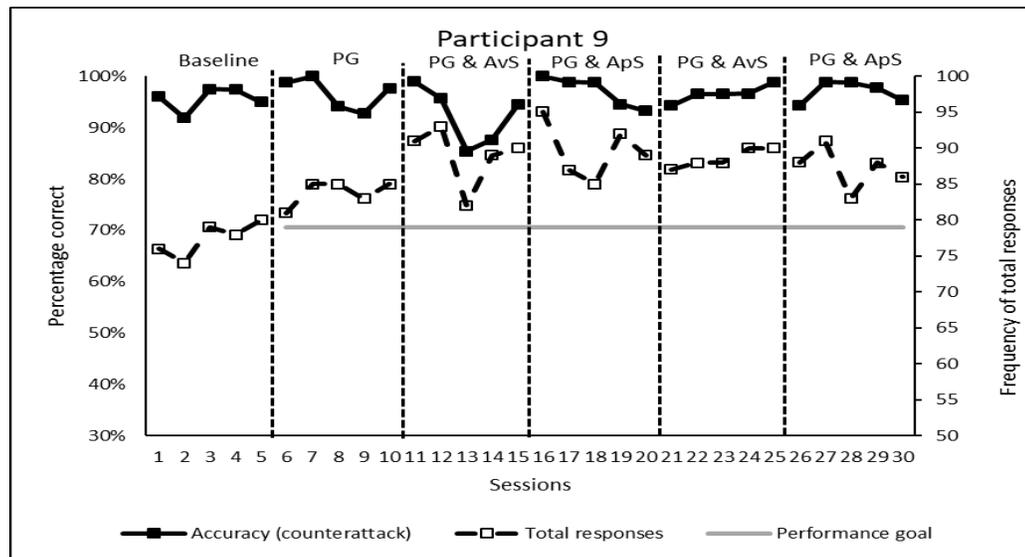


Figure 6. Example of possible countercontrol by participant 9.

Note: Counterattack is indicated by decreases in accuracy due to aversive statements. The percentage of correct responses is shown on the primary Y axis and corresponds to counterattack. The frequency of total response is on the secondary Y axis and the performance goal relating to total responding is in gray. The different conditions include baseline, performance goal (PG), performance goal plus aversive statement (PG & AvS), performance goal plus apologetic statement (PG & ApS).

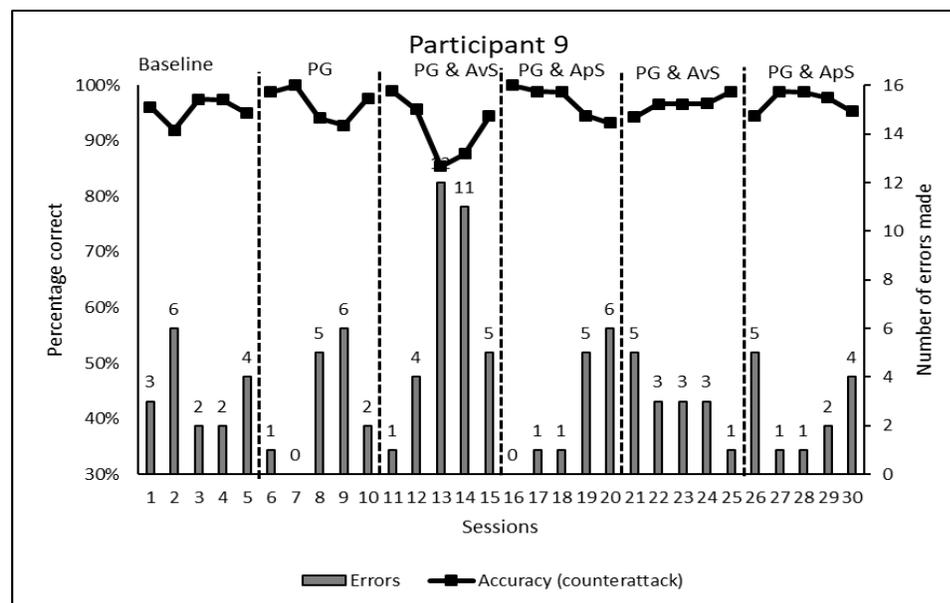


Figure 7. Example of slight countercontrol by participant 9.

Note: Figure indicates percentage of correct responses (primary Y axis) and actual number of errors per session (secondary Y axis). The different conditions include baseline, performance goal (PG), performance goal plus aversive statement (PG & AvS), performance goal plus apologetic statement (PG & ApS).

Participant 9's between session data indicates that he may have countercontrolled during sessions 13 and 14 when he doubled the number of errors. During debriefing, he did not explicitly confirm that he countercontrolled. However, he did report that he was "taken aback and surprised" with the first aversive statement and was upset with the manager/RA. However, participant 9 stated that he thought, "if this is a real job and my manager is upset with me, I cannot be mad about it. I just need to focus on my job." On his post-study survey, he responded he strongly agreed that he believe his performance was affecting the managers score. However, for item 5, "I changed my performance to get back at the managers for making negative comments" and item 7, "When someone says negative things, I want to get back at them," participant 9 responded, respectively, more disagree than agree and neither agree nor disagree. Like participant 11, his between session data suggests he may have countercontrolled, but his verbal reports do not correspond. This suggests that participant 9 may have been unable to accurately tact his behavior or lied on the survey.

Mixed Explanations for Decreased Accuracy

Participants 10, 11, and 4 showed changes in responding that may be indicative of countercontrol but may also be due to extraneous variables. Participants 10 and 11 had low levels of accuracy throughout the conditions following the first aversive statement, which may indicate countercontrol responding. Participant 4's accuracy also decreased in accordance with the aversive statements, however, her verbal report made it unclear whether these slight changes were related to countercontrol.

Figure 8 shows the accuracy and frequency of total responding for participant 10. During baseline and the PG condition, accuracy was at a high level

and remained between 96% and 100%. Following the first aversive statement, accuracy was initially high but then began a descending trend. This descending trend continued through the remaining conditions. Inversely, the frequency of total responding began an ascending trend following the first aversive statement and continued into the following conditions. Before the aversive statement, accuracy was consistently high and the frequency of total responding was above the performance goal. However, accuracy began to decrease only after the aversive statement was introduced, which may be indicative of countercontrol.

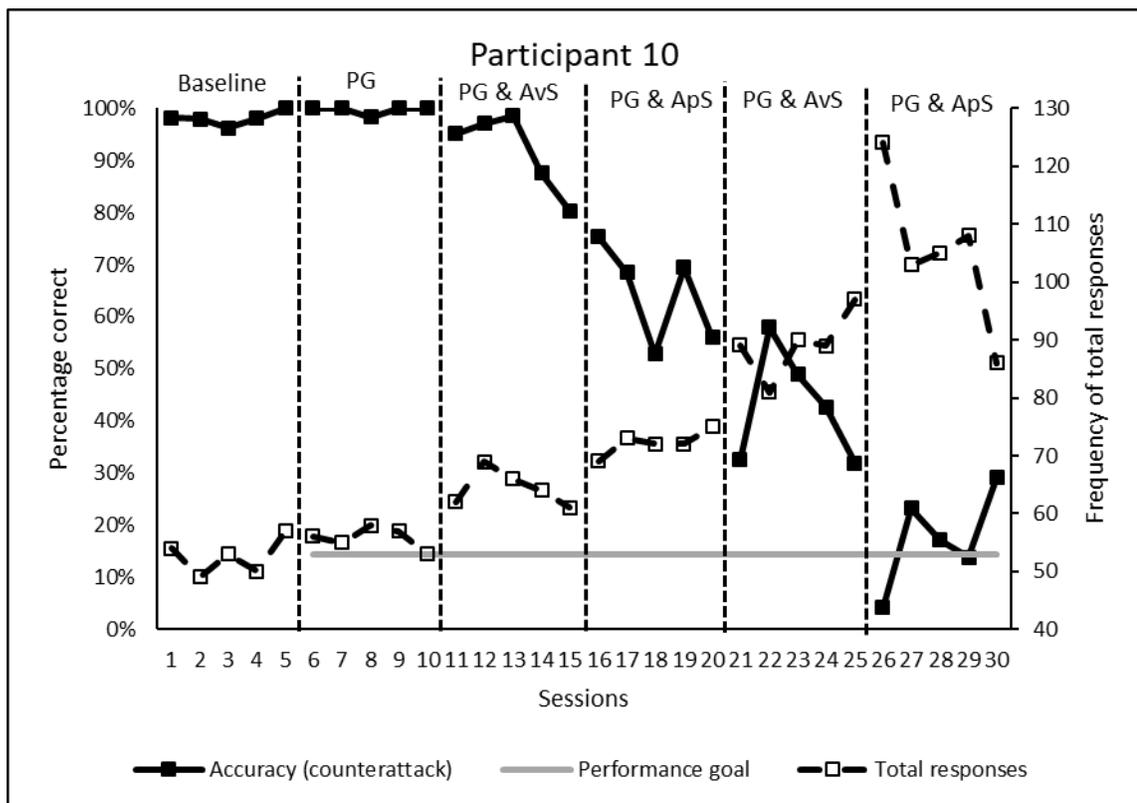


Figure 8. Example of possible countercontrol.

Note: Counterattack is indicated by decreases in accuracy due to aversive statements. The percentage of correct responses is shown on the primary Y axis and corresponds to counterattack. The frequency of total response is on the secondary Y axis. The different conditions include baseline, performance goal (PG), performance goal plus aversive statement (PG & AvS), performance goal plus apologetic statement (PG & ApS).

During the debriefing, participant 10 reported that she believed that the manager/RA was upset with her. However, she also reported that she did not countercontrol and suspected something was unusual. On the post-study survey, she responded that she strongly disagreed to item 5 and item 7 (see Appendix G) which corresponded with her verbal report that she didn't countercontrol. An examination of her within-session data showed that the majority of errors were related to typing "00" for the cents. Prior to sessions, participant 10 was taught how to complete the task to a 70% accuracy level, therefore, her errors were not accidental, but may have been deliberate mistakes. Alternatively, participant 10's behavior may have been under the control of the financial contingency which reinforced frequency of total responding, but not accuracy. If participant 10's accurate responding also failed to come under the control of the social contingency (i.e., the managers' performance score being tied accuracy) this may explain why performance increased while accuracy decreased. The first apologetic statement may have further supported this by validating her current level of accuracy as acceptable.

Figure 9 shows the accuracy and frequency of total responding for participant 12, who also showed very low levels of accuracy. During baseline, accuracy was at a high level and maintained at or near 100%. The frequency of total responding was stable at or near 60 responses per session. Following the introduction of the performance goal, accuracy suddenly decreased in level, and maintained at 0%. Inversely, the frequency of total responding increased abruptly in level to four times higher than that of baseline. Following the first aversive statement, accuracy began an increasing trend that reversed following the first apologetic statement. Accuracy increased slightly upon the introduction of the second aversive statement, but remained low and variable throughout the

condition and introduction of the second apologetic statement. The frequency of total responding remained well above the performance goal and, although variable, maintained approximately between 175 and 225 responses per session for the remaining conditions.

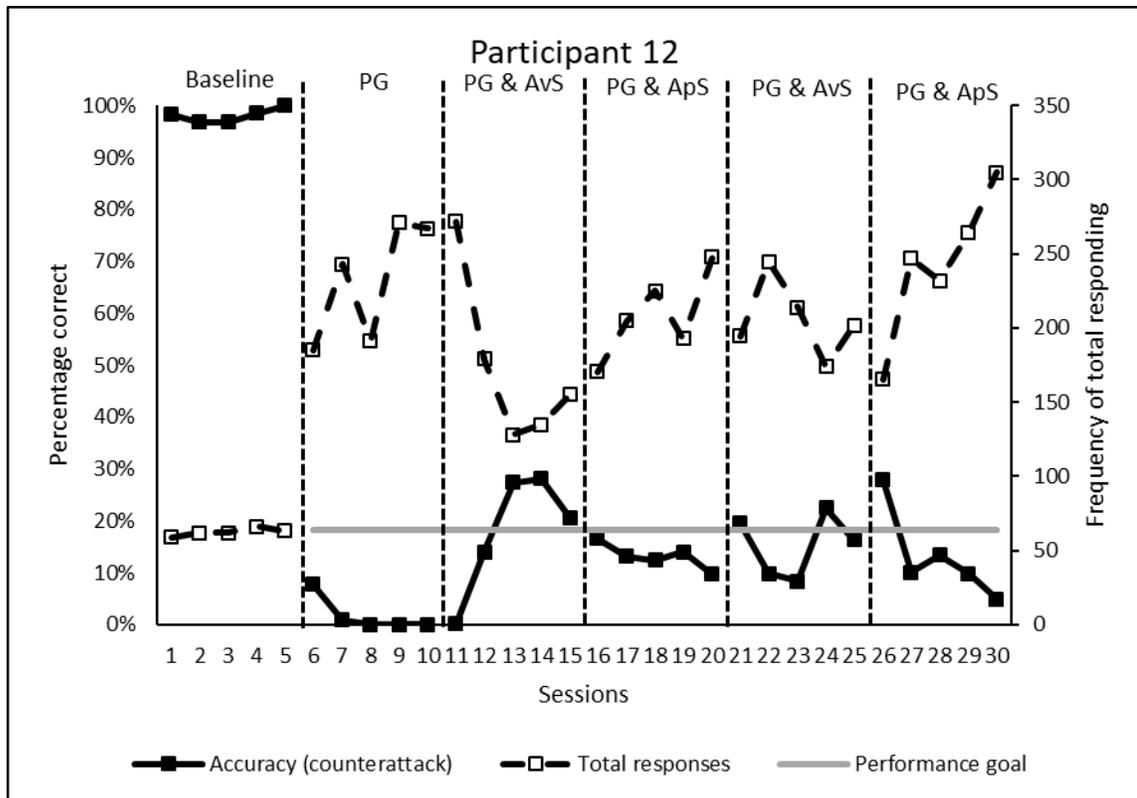


Figure 9. Example of possible counterattack by participant 12.

Note: Counterattack is indicated by decreases in accuracy due to aversive statements. The percentage of correct responses is shown on the primary Y axis and corresponds to counterattack. The frequency of total response is on the secondary Y axis and the performance goal related to total responding is in gray. The different conditions include baseline, performance goal (PG), performance goal plus aversive statement (PG & AvS), performance goal plus apologetic statement (PG & ApS).

Given her low level of accuracy during the PG condition, the researcher reviewed all the procedures before starting day 2. Participant 12 asked for clarification that accuracy was not part of her goal, at which point, the researcher explained that the accuracy did not affect her goal but did affect the managers’

score. She seemed surprised and expressed confusion, but confirmed that she understood the procedures moving forward. Immediately following this was when the first RA delivered the initial aversive statement about her accuracy. She was visibly upset after the aversive manager left, and despite the task clarification, submitted no correct responses on the next session before increasing accuracy slightly.

During debriefing, participant 12 confirmed that she believed the study's parameters. After learning that the managers were confederates, she reported feeling guilty for saying that the first manager was rude and that she disliked him. She also reported that accuracy was less of a concern and that she deliberately made errors during the aversive statement conditions. On the post-study survey, for item 5, "I changed my performance to get back at the managers for making negative comments" and item 7, "When someone says negative things, I want to get back at them," responded, respectively, more agree than disagree and more disagree than agree. However, although participant 12 reported that she countercontrolled, the low levels of accuracy cannot definitively be attributed to the aversive statements given that accuracy first decreased during the PG condition.

Figure 10 shows the accuracy and frequency of total responding for participant 4. During baseline, accuracy remained high, near, or above 90%. Accuracy slightly decreased following the introduction of the performance goal and decreased even further when the aversive statement was delivered. Four out of 5 points were below the level of the previous PG condition. This trend reversed after the first apologetic statement and then remained somewhat variable for the remaining conditions. The lower levels of accuracy in the initial aversive statement condition, and change in trend following the apologetic statement, may

be indicative of countercontrol since they varied based on the aversive and apologetic statements. However, given the previous decreasing trend and overall variability, it is possible that the participant did not engage in countercontrol.

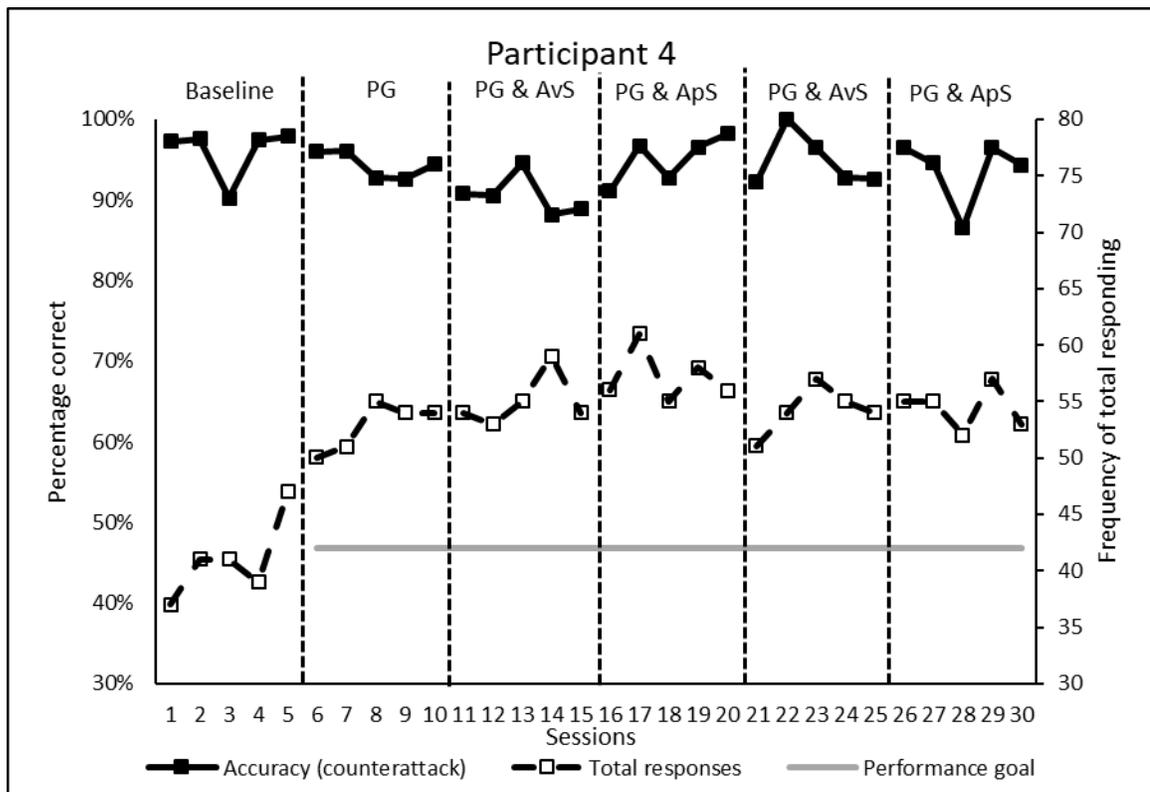


Figure 10. Example of possible countercontrol by participant 4.

Note: Counterattack is indicated by decreases in accuracy due to aversive statements. The percentage of correct responses is shown on the primary Y axis and corresponds to counterattack. The frequency of total response is on the secondary Y axis. The different conditions include baseline, performance goal (PG), performance goal plus aversive statement (PG & AvS), performance goal plus apologetic statement (PG & ApS).

During debriefing, participant 4 did not admit to countercontrolling, but confirmed that she believed the first set of statements. Her survey responses also did not indicate that she countercontrolled. As a potential confound, participant 4 was observed tallying her responses; this was later confirmed during the debriefing. She also reported referencing her tally records following the aversive

statements and noticing a difference between her records and the statements. This self-generated performance feedback may explain why accuracy changed only in the first aversive and apologetic statement conditions. Participant 4 may not have believed the second set of statements, and as such she did not change her responding.

Possible Negative Reinforcement Effect

Of the remaining eight participants (see Appendix H), only participant 2 showed a potential effect, but the aversive statements increased, rather than decreased, accuracy. Figure 11 shows the accuracy and frequency of total responding for participant 2. During baseline and the PG condition, accuracy was variable and decreased steadily over time, while the frequency of total responding increased. Interestingly, accuracy increased in level following the first aversive statement, and then decreased when the second RA issued the apologetic statement, before increasing back to previous levels and remaining fairly stable for remaining conditions. These changes in accuracy may be more indicative of negative reinforcement rather than countercontrol since the first aversive statement increased accuracy and the first apologetic statement decreased it.

Participant 2's verbal report during debriefing did not indicate countercontrol. Indeed, the participant reported that the first aversive statement surprised her and that she tried to perform better. On the post-study survey, participant 2 responded more disagree than agree for both items 5 and 7 (see Appendix G), which further suggests that she did not countercontrol. Her verbal reports match her between session data and indicate that changes in accuracy may be more likely due to negative reinforcement.

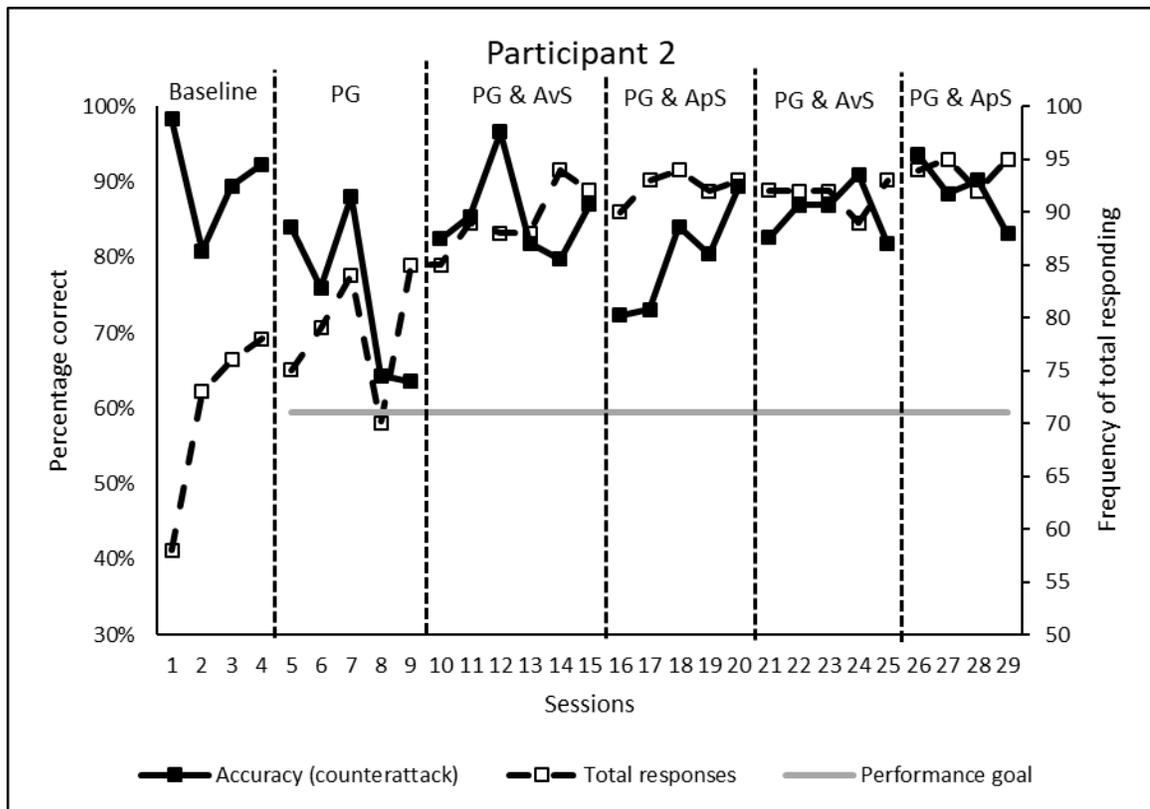


Figure 11. Example of negative reinforcement by participant 2.

Note: Negative reinforcement is indicated by increases in accuracy due to aversive statements. The percentage of correct responses is shown on the primary Y axis and corresponds to counterattack. The frequency of total response is on the secondary Y axis and the performance goal related to total responding is in grey. The different conditions include baseline, performance goal (PG), performance goal plus aversive statement (PG & AvS), performance goal plus apologetic statement (PG & ApS).

While participant 2's data and verbal report support negative reinforcement, it is unclear if the same would apply to the remaining participants who demonstrated no change in accurate responding. Specifically, the remaining seven participants maintained high levels of accuracy throughout all conditions, which could have prevented negative reinforcement effects given that responding could not increase further (see Appendix H).

Post-Study Survey

Table 1 shows the overall findings from the post-study survey. Six out of the 14 participants believed that the manager/RA was upset with their performance (Item 1 on survey) and 12 out of 14 participants thought the manager/RA was genuinely apologetic (Item 13 on survey). Additionally, 3 out of 14 participants agreed that they made more errors because of the aversive statements and that they changed their behavior to get back at the manager that delivered the aversive statements (Item 2 on survey). Finally, 8 out of 14 participants believed the purpose of the study was to evaluate the managers (Item 14 on Survey).

Table 1

Overall Post-Study Survey Results

Category	Survey Item	Number of responses				
		Strongly Disagree	More disagree than agree	Neither agree than disagree	More agree than disagree	Strongly agree
Believability of study	1 (aversive statement)	4	1	3	5	1
	3 (managers' score)	2	1	3	3	4
	11 (apologetic statement)	0	1	2	6	5
	13 (apologetic statement)	0	0	2	10	2
	14 (purpose)	3	2	1	4	4
	15 (apologetic statement)	2	0	7	4	1
	16 (condition order)	0	4	6	3	1
Counterattack	2 (more errors)	5	4	3	3	0
	5 (got back manager)	5	3	2	3	0
	7 (history counterattacking)	5	3	3	2	1
Passive resistance	8 (decrease rate)	6	6	1	1	0
	12 (latency respond)	10	2	0	1	0
Escape	4 (ended sessions)	8	4	0	1	0
	6 (avoidance)	1	2	1	3	4
Historical variables	9 (work history)	8	1	3	1	0
	10 (personal history)	6	2	4	2	0

Note: Survey assessed the believability of the study and participants' history with countercontrol. Bold numbers indicate favorable responses.

CHAPTER 5: DISCUSSION

The overall finding is that the procedure may have evoked countercontrol in six participants, with the most noticeable being participant 11. Prior to the current study, an experimental procedure for evoking countercontrol has been absent from the countercontrol research, which continues to be mostly conceptual (Delprato, 2002; Miller, 1991; Skinner, 1953, 1971). Furthermore, of the experimental research available in OBM, countercontrol effects were unintentionally evoked (Boren & Colman, 1970; Ludwig & Geller, 1997; Mawhinney & Fellows-Kubert, 1999). The current experimental procedure is the first to be specifically designed to evoke countercontrol and may have done so with multiple participants. As such, this procedure may prove to be an effective way to study countercontrol and may generate new research that is empirical, rather than conceptual, in nature.

The aversive statements were a distinct characteristic of the experimental procedure because they simulated actual verbal behavior found in work settings. At the onset of the study, believability of the statements and their ability to evoke countercontrol was a concern. However, observations of participants during the study and their verbal reports indicate that the aversive statements evoked emotional responses and were believable. For instance, participant 12 commented several times about the rudeness of the manager who delivered the aversive statements. This finding has important implications for organizational settings because it suggests that managers who make similar aversive statements may inadvertently evoke countercontrol. Furthermore, the current study demonstrated that organizational behavior, such as manager's verbal behavior, can be studied in a controlled environment. These findings, and research based on them, can inform

organizational leadership as to how their verbal behavior may improve, or hinder, employee performance.

An additional finding of the study was that everyone did not countercontrol. Despite the statements being aversive, they likely only evoked countercontrol from 3-6 participants. Of those participants, only participant 11 showed changes in accuracy that strongly suggested countercontrol. This finding indicates that certain conditions need to be present for countercontrol to occur more frequently. For instance, an individual may need a particular reinforcement history that makes even slight aversive stimuli more salient and intense to an extent that they reliably evoke countercontrol responses. Conversely, individuals with a reinforcement history for compliance may not be as likely to countercontrol. It's worth noting that all participants, except for participant 11, were young college students and that the study took place on a university campus. Participants that were highly accurate may have responded as such because of their extensive and recent reinforcement histories for following rules of an authoritative figure in an educational setting. Participant 11 differed from these participants in that she perhaps did not have such a recent reinforcement history for following rules in such a setting.

A third finding of the study is that people either inaccurately tacted their own behavior or lied about countercontrolling. For instance, participants 9, 10, and 11, all reported that they did not countercontrol. However, changes in their accuracy following the aversive statement suggests that, to some extent, they did countercontrol. Within-session data for participants 10 and 11, in particular, indicate that they knowingly made more errors following the aversive statement. In contrast, participant 5 (see Appendix H) admitted to making errors and not correcting them because doing so would increase the score of the manager that

delivered the aversive statements. However, her between-session data showed her accuracy remaining high across all of the conditions. The remaining participants were more accurate in their correspondence between self-report of countercontrolling (or lack thereof) and actual accuracy. Of all the participants, participant 12 was the most vocal and forthcoming. She admitted to making more errors to decrease the score of the aversive manager; and the within-session data confirms her verbal report. These results suggest that some individuals that engage in countercontrolling may lie about it, even when asked directly. Alternatively, it may also suggest that a person does not need to tact that they are countercontrolling for them to actually countercontrol.

Limitations

The current experimental procedure may evoke countercontrol but, with modifications, may be more effective. One modification would be to make the aversive statements more aversive, thereby increasing the probability and intensity of countercontrol for more participants. The content may be slightly modified so that it is more critical of participants' behavior. Additionally, the aversive statements could be paired with a response cost procedure. For example, following the aversive statements, the manager/RA could tell participants that they lost half of their earnings. Regardless of how the aversiveness is increased, caution should be taken to avoid statements becoming overly aversive and eliciting strong emotional or physically aggressive responses.

Another modification relates to the dependent variables. In the current study, only one of the four dependent variables was a reliable measure for countercontrol. A clearer understanding of countercontrol would be facilitated if all of its topographies could be studied. The current study's measures for passive

resistance and escape were ineffective, as such future research should consider modifying their methods. For example, future research could make sessions longer, which would make escape more reinforcing. In the current study, the sessions were 4 minutes long and not a single participant ended early. If participants end sessions sooner, and do not reach their goal more frequently following the aversive statement, then it may be evidence of escape countercontrol.

In addition, while accuracy was a good measure for counterattack, errors was also a subtle response. At times it was unclear whether a participant's error was due to inattention or a deliberate response to decrease the manager/RA's score. Modifying the response to be more obvious could make counterattack responses easier to see. One option would be to measure the frequency of total responses as the counterattack response and make the goal and financial consequence contingent on accuracy instead. Participants then could, with a single response, reach their goal and decrease the manager/RA's score. Another modification may be adding a choice procedure following the statements, such that participants can select to award the manager/RA additional "points" or have the manager/RA's score based solely on their performance on the task. Should participants want to decrease the manager/RA's score, they could counterattack by decreasing their performance and not award them additional "points."

Finally, some procedural considerations such as believability and self-generation of rules also warrants discussion. The believability of the procedures is a concern given that deception is an integral part of the study. The post-study surveys showed that the majority of participants believed the statements and false purpose of the study. Despite these results, repeated exposure to the aversive and apologetic statements weakened the believability of the procedure and may

explain why effects did not replicate for several participants. Future studies can address this limitation by using a multiple baseline design and only delivering one aversive and apologetic statement. Second, participants may have delivered performance feedback on their behavior and generated rules concerning the managers/RAs, both of which may have affected the results. For instance, participant 4 tallied her responses and participant 9 attributed the aversive statements to the manager/RA having a bad day. Future research can indirectly address this limitation by changing other parameters of the procedure. For example, shortening the length of sessions or increasing the performance goal may discourage participants from taking data.

Future Research

To further enhance the effectiveness of the current procedure, future countercontrol research should consider providing participants with feedback that their behavior is actually improving or worsening the managers/RAs' score. Doing so could make the positive reinforcement component of countercontrol more salient to participants which may evoke higher rates of counterattack. Should this prove to be effective, feedback could then be systematically manipulated to determine its effect on counterattack. For instance, is there a point at which participants will not decrease their performance even if the manager/RA delivered an aversive statement.

An additional consideration for future countercontrol research should be using the post-study survey, or a variant of it, as tool to identify those participants that are more likely to countercontrol. In the current study, several individuals participated in the study before any demonstrated a possible countercontrol effect. A screening tool will decrease the need to run as many participants and increase

the likelihood that countercontrol effects are recorded. It may also help identify variables that make people likely to countercontrol. For instance, does a recent history of aversive control increase the likelihood that a person will engage in countercontrol?

Future research should also continue to use the current work task, considering how well the task worked for the procedure and as a data collection instrument. One strength of the task was that it allowed participants to make numerous responses within a short time, which made the procedure sensitive to subtle changes. This sensitivity is advantageous for future countercontrol research but can also benefit studies that focus on other phenomenon. For example, the task can be used to study reinforcer qualities such as the intensity of stimulus or rate of habituation to a reinforcer. Additionally, it may be utilized to evaluate the effects of motivative augmentals on organizational behavior.

In conclusion, the current study adds to the empirical research on countercontrol. The majority of research on countercontrol is conceptual and there are only a few applied studies that reference countercontrol as a post-hoc explanation for their unusual results. The current study is the first to design an experimental procedure specifically to evoke countercontrol. Although explorative, the current study contributes an experimental procedure that, with further refinements, could be used to study countercontrol and its controlling variables. At the very least, the current study may stimulate further discussion about countercontrol and how best to study it.

REFERENCES

REFERENCES

- Azrin, N. H., Hutchinson, R. R., & Hake, D. F. (1963). Pain-induced fighting in the squirrel monkey. *Journal of the Experimental Analysis of Behavior*, 6, 620.
- Azrin, N. H., & Holz, W. C. (1966). Punishment. In W. K. Honig (Ed.), *Operant behavior: Areas of research and application* (pp. 380-447). New York, NY: Appleton-Century-Crofts.
- Balsam, P.D., & Bondy, A.S. (1983). The negative side effects of reinforcement. *Journal of Applied Behavior Analysis*, 16, 283-296.
- Biglan, A. (2015). *The nurture effect: How the science of human behavior can improve our lives and our world*. Oakland, CA: New Harbinger.
- Boren, J.J., & Colman, A.D. (1970). Some experiments on reinforcement principles within a psychiatric ward for delinquent soldiers. *Journal of Applied Behavior Analysis*, 3, 29-37.
- Chance, P. (1998). *First course in applied behavior analysis*. Long Grove, IL: Waveland Press.
- Cooper, J.O., Heron, T.E., & Heward, W.L. (2007). *Applied behavior analysis* (2nd. ed.) Upper Saddle River, NJ: Pearson Merrill Prentice Hall.
- Delprato, D. J. (2002). Countercontrol in behavior analysis. *The Behavior Analyst*, 25(2), 191-200.
- Doughty, S., Poe, S., & Anderson, C. (2009). Effects of punishment and response-independent attention on severe problem behavior and appropriate toy play. *Journal of Early and Intensive Behavior Intervention*, 2(2), 91-9.
- Fawcett, S. (1991). Some values guiding community research and action. *Journal of Applied Behavior Analysis*, 24(4), 621-636.
- Frederiksen, L.W., & Peterson, G.L. (1974). Schedule induce aggression in nursery school children. *Psychological Record*, 24, 343-351.
- Frederiksen, L.W., & Peterson, G.L. (1977). Schedule-induced aggression in humans and animals: A comparative parametric review. *Aggressive Behavior*, 3, 57-75.

- Hantula, D. A. (2015). Job satisfaction: The management tool and leadership responsibility. *Journal of Organizational Behavior Management*, 35(1-2), 81-94.
- Harrell, W.A., & Ross, I.D. (1974). Two fixed-ratio schedules and their impact on aggression in humans. *Psychological Reports*, 34, 785-786.
- Hineline, P. N. (1984). Aversive control: A separate domain? *Journal of the Experimental Analysis of Behavior*, 42(3), 495-509.
- Johnson, D.A., & Dickinson, A.M. (2010). Employee-of-the-month programs: Do they really work? *Journal of Organizational Behavior Management*, 30(4), 308-324.
- Kelly, J. F., & Hake, D. F. (1970). An extinction-induced increase in an aggressive response with humans. *Journal of Experimental Behavior Analysis*, 14, 154-164.
- Lewon, M., & Hayes, L.J. (2014). Towards an analysis of emotions as products of motivation operations. *Psychological Record*, 64(4), 813-825.
- Ludwig, T.D., & Geller, S.E. (1991). Improving the driving practices of pizza deliverers: Response generalization and moderating effects of driving history. *Journal of Applied Behavior Analysis*, 24, 31-44.
- Ludwig, T.D., & Geller, S.E. (1997). Assigned versus participative goal setting and response generalization: Managing injury control among professional pizza delivers. *Journal of Applied Psychology*, 82, 253-261.
- Ludwig, T.D., & Geller, S.E. (1999). Behavioral impact of a corporate driving policy: Undesirable side-effect reflect countercontrol. *Journal of Organizational Behavior Management*, 19(2), 25-34.
- Mace, C. F. (1994). Basic research needed for stimulating the development of behavioral technologies. *Journal of the Experimental Analysis of Behavior*, 61(3), 529-550.
- Mawhinney, T.C., & Fellows-Kubert, C. (1999). Positive contingencies versus quotas: Telemarketers exert countercontrol. *Journal of Organizational Behavior Management*, 19, 35-55.
- Michael, J. (1993). Establishing operations. *The Behavior Analyst*, 16, 191-206.

- Miller, L.K. (1991). Avoiding the countercontrol of applied behavior analysis. *Journal of Applied Behavior Analysis*, 24, 645-647.
- Morse, W. H., & Kelleher, R. T. (1977). Determinants of reinforcement and punishment. In W. K. Honig, & J. E. R. Staddon (Eds.), *Handbook of operant behavior* (pp. 174-200). Englewood Cliffs, NJ: Prentice-Hall.
- Pierce, D., & Cheney, C.D. (2013). *Behavior analysis and learning*. New York, NY: Psychology Press.
- Seligman, M. E. P., & Maier, S. F. (1967). Failure to escape traumatic shock. *Journal of Experimental Psychology*, 74, 1-9.
- Sidman, M. (2001). *Coercion and its fallout*. Boston, MA: Authors Cooperative.
- Skinner, B.F. (1953). *Science and human behavior*. (Free Press paperback). New York, NY: Macmillan.
- Skinner, B.F. (1971). *Beyond freedom and dignity*. Indianapolis, IN: Hackett Publishing Company.
- Skinner, B.F. (1974). *About behaviorism*. New York, NY: Vintage Books.
- Sugai, G., & Horner, R. R. (2006). A promising approach for expanding and sustaining school-wide positive behavior support. *School Psychology Review*, 35(2), 245-259.
- Ulrich, R. E., & Azrin, N. H. (1962). Reflexive fighting in response to aversive stimulation. *Journal of the Experimental Analysis of Behavior*, 5, 511-520.
- Ulrich, R.E., Dulaney, S., Arnett, E., & Mueller, K. (1973). An experimental analysis of nonhuman and human aggression. In J.F., Knutson (Ed), *The control of Aggression*. Chicago, IL: Aldine.

APPENDICES

APPENDIX A: RECRUITMENT FLYER

Appendix A

Recruitment Flyer

Earn up to \$30.00!

We are conducting a study on managerial performance. We are looking for participants 18 years and older. The study will involve two 1.5-2.5 hour sessions on 2 separate days in the same week. Times are flexible so we can work around most schedules.

Please contact Miguel Vieyra at mvieyra@mail.fresnostate.edu for more information.

Note: This study has been approved by the Committee on the Protection of Human Subjects at California State University, Fresno.

APPENDIX B: INFORMED CONSENT

Appendix B

INFORMED CONSENT FORM

You are invited to participate in a study conducted by Miguel Vieyra, a psychology student at California State University, Fresno, under the supervision of Dr. Sharlet Rafacz. You were selected as a possible participant for this study because of your willingness to participate and your time availability. The aim of the study is to evaluate your performance on a work task under different conditions. The conditions are designed such that they simulate a typical work environment and you will be assigned a pair of managers to monitor your performance and provide feedback.

This study will take place across two days. Each day will last between 1 1/2 and 2 1/2 hours. This time will be broken up into 4-minute work sessions and several breaks will be given to allow for bathroom and rest breaks. All sessions will take place at the Science 2 building in room 228. During these work sessions, you will be asked to complete a check processing task. Simulated bank checks with values ranging between \$10.00 to \$999.99 will be presented on a screen. You will be asked to type the displayed value into the box at the bottom of the screen and push the enter key to proceed onto the next value. The laptop will be provided. Your performance on this work task will be recorded by a computer software program designed to record keystrokes. Sessions may also be monitored and recorded via a video camera. By signing this consent form, you agree to allow the researcher to access information saved by the computer software and via the video camera.

There are moderate anticipated risks from participating in the current study. To simulate typical work environments, common stressors associated with repeated tasks, performance monitoring, and performance feedback will be present. These events may produce some discomfort or distress. However, the level of discomfort or distress should be no more than you may experience in a typical work environment.

You will be paid for your participation. Specifically, during the study, you will be given a performance goal. For every session that you meet or exceed the goal, you will earn between 50 cents to a dollar. Money earned will be given once the study is complete.

Any identifiable information obtained in connection with this study will remain confidential and will be disclosed only with your permission or as required by law. All data collected will remain anonymous when presented to other members of the university or when disseminated through presentation or publication of the study

results.

Participation is completely voluntary and refusal to participate will not impact your relationship with California State University, Fresno. If you decide to participate, you are free to withdraw your consent and to discontinue participation at any time without penalty. The Committee on the Protection of Human Subjects at California State University, Fresno has reviewed and approved the present research. If you have any questions, either now or later, they can be directed to Dr. Sharlet Rafacz at (559) 278-2479 or srafacz@csufresno.edu. Questions regarding the rights of research subjects may be directed to Kris Clarke, Chair, CSUF Committee on the Protection of Human Subjects, (559) 278-4468. You will be given a copy of this form to keep.

YOU ARE MAKING A DECISION ON WHETHER OR NOT TO PARTICIPATE. YOUR SIGNATURE INDICATES THAT YOU HAVE DECIDED TO PARTICIPATE, HAVING READ THE INFORMATION PROVIDED ABOVE.

Participant Signature

Print Name of Participant

Date _____

Signature of Investigator

APPENDIX C: AVERSIVE STATEMENTS

Appendix C

Aversive Statements

Aversive statement 1- Listen, so far it looks like you're (still) doing a bad job. Your performance is affecting my score. Can you figure it out!

Aversive statement 2 You know what, you are (still) doing terrible. You are not doing what I told you to do and my score is not going to suffer because of you. You need to do a better job!

APPENDIX D: TASK

Appendix D

Task

Check Verify Software

0

Program Controls

Start Task Minimize Program Exit Program

John Doe

Pay to the order of Linda Schuelke, V.P \$ 158.61

One hundred fifty-eight and 61/100 ***** Dollars

Memo _____ John Doe _____

| : 00067894 : | 12312120312 311

_____ | _____

Next Check >>

Enter only numbers and decimal (example 150.77)

APPENDIX E: STARTING INSTRUCTION SCRIPTS

Appendix E

DAY 1

(RA1RA2-AV1AP1AV2AP2)

Baseline

General procedures

Seth delivers the starting instructions in a neutral manner by reading the instructions in their normal way.

Pre-session prep

Seth enters the room during the previous break and sets the timer for 4 minutes.

Once the participant enters the room, Seth instructs the participants to take a seat, stands on the mark next to the participant, and delivers the starting instructions.

START

Starting instructions/script

“The session will now begin. Shortly, you will open the check processing task and a check will appear on the screen. You will need to type the value on the check into the box at the bottom of the screen and push enter to proceed to the next check (Pause)

You will have 4 minutes to complete as many or as few of the checks as you wish. When the timer rings, please push the exit program button, enter obm, and stop the timer. If you want, you can take a 1 minute break by setting the timer to a minute and starting it. During this break you can stand up, walk around, or look at your phone. Once the timer rings, or if you do not want to take a break, you can start the next session by opening the check processing task, setting the timer to 4 minutes and starting it, and pushing the start task button.

If you would like to end a session before the time elapses, exit the program and stop the timer. Using the directions that I just mentioned, you can take a 1-minute break or you can start the next session.

The other manager will come in after the 5th session and give you a longer break. If you don't have any questions, the session will now start. Please open the check processing task”

Seth starts the timer and exits the room.

END

Ending baseline

Once the timer rings at the end of the fifth baseline session, Mitch enters the room, stops the timer, and delivers the ending instructions.

Ending instructions/script

“These sessions have ended. Please exit the program (if applicable). You will now have a 3 minute break. Feel free to stand up, look at your phone, or go to the restroom. I will need the room for a couple of minutes to prepare for the next

sessions, so if you don't mind, please step into the hallway. The next session will start once the timer rings"

Performance Goal (PG)

General procedures

Mitch delivers the starting instructions in a neutral manner by reading the instructions.

Pre-session prep

Mitch sets the timer for 4 minutes.

Mitch opens the check data file and calculates the performance goal.

Mitch finds the participant and informs he/she that the session will now begin. If the participant is in the room, Mitch stands on the mark next to the participant and reads the starting instructions.

START

Performance goal starting instructions/script

The session will now begin. For all remaining sessions, you will have a performance goal of _____ (enter goal) processed checks. Every session that you reach or go over your goal will earn you a dollar. During the 3 minute breaks, me and the other manager will write how much money you earned during the last 5 sessions (point to the prompt on the wall). Lastly, I want to point out that your performance goal is only for the total amount of checks processed not their accuracy or efficiency..

All other procedures will remain the same. If you don't have any questions, the session will now start. Please open the check processing task"

Mitch starts the timer and exits the room.

END

Ending B condition

Once the timer rings at the end of the fifth B session, Seth enters the room, stops the timer, and delivers the ending instructions.

Ending instructions/script

"Please exit the program (if applicable). This concludes today's portion of the study. You are free to go. We will see you next time at the time you were assigned. Good Bye"

DAY 2

(RA1RA2-AV1AP1AV2AP2)

Review of Procedures

Miguel meets the participant in room 228

Review script

“Hello (participant’s name), thank you for coming. Today will be the second and last day of the study.

Before starting, I want to review a few things. Remember that each session is 4 minutes in length. If you want, you can take a 1 minute break between sessions. You will do a block of 5 sessions and then get a 3-minute break.

The two managers will each guide you through the remaining 20 sessions. Remember that your performance will affect the score of which ever manager starts the session.

Your performance goal is ____ (enter goal) processed checks. Every session that you reach or go over this goal will earn you a dollar. Also remember that your performance goal is only for the total amount of checks processed and not their accuracy or efficiency.

Do you have any questions? (answers questions)

Would you like me to review how to do the work task or timer? (model work task or timer)

Ok, one of the managers will be in shortly.

Miguel sets the timer and exits the room.

Aversive statement 1

General procedures

Seth will say the starting instructions in a matter of fact manner and in a frustrated tone.

Seth enters the room and avoids making eye contact with the participant.

Seth stands on the mark, briefly (1 second) looks at the participant and reads the starting instructions.

START

Aversive statement starting 1 instructions/script

“The procedures will be the same as before. Remember that every session that you reach or go over your goal of _____ (enter goal) processed check you will earn a dollar”

Seth looks away from the script and stares at the participant.

Listen, so far it looks like you're (still) doing a bad job. Your performance is affecting my score. Can you figure it out!

Seth pauses and takes a deep breath

“Open the check processing task”

Seth starts the timer and exits the room.

END

Ending C condition

Once the timer rings at the end of the fifth C session, Mitch enters the room, stops the timer, and delivers the ending instructions.

Ending instructions/script

“Please exit the program (if applicable). You will now have a 3 minute break. Like before, feel free to stand up, look at your phone, or go to the restroom. I need to set up for the next sessions so please step into the hallway. The next session will start once the timer rings”

Apologetic Statement 1

General procedures

Except for the apologetic statement, Mitch will deliver the starting instructions in a neutral tone.

Mitch will say the apologetic statement in a sympathetic manner.

Pre-session prep

Mitch sets the timer for 4 minutes. If the participant is not in the room, Mitch finds the participant and informs he/she that the session will now begin. If the participant is in the room, Mitch stands on the mark next to the participant and reads the starting instructions.

START

Apologetic statement 1 starting instructions/scripts

Mitch looks at the participant and makes eye contact while delivering the apologetic statement.

“I saw what happened with the other manager, so sorry about that. From what I can tell you’re doing fine. Just keep doing what you are doing”

Mitch pauses, looks at the starting script, and begins to read.

“All of the procedures are still the same. If you don’t have any questions, the session will now start. Please open the check processing task”

Mitch starts the timer and exits the room.

END

Ending D condition

Once the timer rings at the end of the fifth D session, Seth enters the room, stops the timer, and delivers the ending instructions in a matter of fact manner.

Ending instructions/script

“Please exit the program. You will now have a 3 minute break. I will need the room to prepare for the next sessions, so please step into the hallway. The next session will start once the timer rings”

Aversive statement 2

General procedures

Seth will say the starting instructions in a matter of fact manner and in a frustrated tone.

Seth enters the room and avoids making eye contact with the participant.

Pre-session prep

Seth sets the timer for 4 minutes. If the participant is not in the room, Seth finds the participant and informs he/she that the session will now begin. If the participant is in the room, Seth stands on the mark, briefly (1 second) looks at the participant and reads the starting instructions.

START

Aversive statement starting 2 instructions/script

“All of the procedures are the same as before”

Seth pauses and takes a deep breath

You know what, you are (still) doing terrible. You are not doing what I told you to do and my score is not going to suffer because of you. You need to do a better job!

Seth pause and rubs his forehead

“Open the check processing task and begin”

Seth starts the timer and exits the room

END

Ending C condition

Once the timer rings at the end of the fifth C session, Mitch enters the room, stops the timer, and delivers the ending instructions.

Ending instructions/script

“Please exit the program. You will now have a 3 minute break. I will need to prepare for the next sessions, so please step into the hallway. The next session will start once the timer rings”

Apologetic Statement 2

General procedures

Except for the apologetic statement, Mitch will deliver the starting instructions in a neutral tone.

Mitch will say the apologetic statement in a sympathetic manner.

Pre-session prep

Mitch sets the timer for 4 minutes. If the participant is not in the room, Mitch finds the participant and informs he/she that the session will now begin. If the participant is in the room, Mitch stands on the mark next to the participant and reads the starting instructions.

START

Apologetic statement 2 starting instructions/scripts

Mitch looks at the participant and makes eye contact while delivering the apologetic statement.

“I am sorry about the other manager. I really don’t know what he is talking about. To be honest you’re doing a good job.

Mitch pauses, looks at the starting script, and begins to read.

“All of the procedures are still the same. If you don’t have any questions, the session will now start. Please open the check processing task”

Mitch starts the timer and exits the room.

END

Ending D condition

Once the timer rings at the end of the fifth D session, Miguel enters the room, stops the timer, and delivers the ending instructions.

Ending instructions/script

“Please exit the program. The study has now ended. If you like, you can take a restroom break otherwise I would like to go over the study with you.

Miguel begins to debrief the participant.

APPENDIX F: DEBRIEFING

Appendix F

Debriefing

Thank you for participating in the study, your help is appreciated. At this moment, I would like to take some time to discuss parts of the study that involved some deception.

First, the purpose of the study was not to evaluate the managerial ability of the RA, but to evaluate the ability of an experimental procedure to evoke countercontrol. Countercontrol is a term used in the behavioral literature to describe behavior that is evoked by aversive stimuli and that functions to punish or not reinforce the person who used the aversive stimuli. In the present study, the function of the RA, who is a part of the study, is to evoke countercontrol responses from you. These countercontrol responses were measured by recording your performance on the work task. Should you have known the true purpose of the study, you may change your behavior such that the data would have been inaccurate.

Second, the negative statements are also a part of the study. The RA was not genuinely upset with you when he/she said the negative statements. The RA intentionally delivered the negative statements because they were meant to function as aversive stimuli that evoke countercontrol. The apologetic statements were also part of the study. The RA intentionally delivered them because they were meant to decrease countercontrol effects. Previously, I randomly selected both types of statements, so they did not reflect your performance or the RA's present conditions in any way.

Third, at the onset of the study, you were told that the RA would be receiving a score based on how well you performed on the task. However, your performance, either good or bad, had no effect on the RA. In fact, the RA will not be receiving any score. This situation was deliberately established so that you would believe that you could punish or reinforce the RA by affecting their score.

Fourth, you were told that you would earn money every time you meet or exceed your goal, but this is not the case. You will be given the maximum amount possible regardless of your performance.

The RA's use and delivery of the negative statements may have caused you to experience some negative effects, such as feelings of anger, frustration, sadness, or general uncomfortableness. It is completely normal to have these feelings given the nature of the negative statements. If you did experience these feelings, please consider that the negative statements and your performance were not connected in any way and that the RA was not genuinely upset with you. With that said, I am happy to discuss these feelings, or any other negative effects with you right now. Alternatively, you can contact the Student Health and Counseling Center or my advisor should you like to discuss these effects further.

Student Health and Counseling Center: (559) 278-2734

Faculty Advisor: Sharlet Rafacz, Ph. D., Email: srafacz@csufresno.edu Phone: (559) 278-2479

APPENDIX G: POST-STUDY SURVEY

Appendix G
Post-study Survey

1. I believed the manager was genuinely upset with my performance.

Strongly disagree	More disagree than agree	Neither agree nor disagree	More agree than disagree	Strongly agree
1	2	3	4	5

2. I made more errors because of the negative comments.

Strongly disagree	More disagree than agree	Neither agree nor disagree	More agree than disagree	Strongly agree
1	2	3	4	5

3. I believed my performance was affecting the manager's score.

Strongly disagree	More disagree than agree	Neither agree nor disagree	More agree than disagree	Strongly agree
1	2	3	4	5

4. I ended my sessions early because the manager said negative comments.

Strongly disagree	More disagree than agree	Neither agree nor disagree	More agree than disagree	Strongly agree
1	2	3	4	5

5. I changed my performance to get back at the manager for making negative comments.

Strongly disagree	More disagree than agree	Neither agree nor disagree	More agree than disagree	Strongly agree
1	2	3	4	5

6. When people give me negative feedback, I tend to avoid them in the future.

Strongly disagree	More disagree than agree	Neither agree nor disagree	More agree than disagree	Strongly agree
1	2	3	4	5

7. When someone says negative things, I want to get back at them.

Strongly disagree	More disagree than agree	Neither agree nor disagree	More agree than disagree	Strongly agree
1	2	3	4	5

8. I worked slower because the manager said negative comments.

Strongly disagree	More disagree than agree	Neither agree nor disagree	More agree than disagree	Strongly agree
1	2	3	4	5

9. Currently, I have a supervisor that frequently makes negative comments about my work performance.

Strongly disagree	More disagree than agree	Neither agree nor disagree	More agree than disagree	Strongly agree
1	2	3	4	5

10. Someone close to me (e.g. boyfriend, sibling, parent, or friend) frequently makes frequent negative comments about my behavior.

Strongly disagree	More disagree than agree	Neither agree nor disagree	More agree than disagree	Strongly agree
1	2	3	4	5

11. The manager did not upset me with his comments.

Strongly disagree	More disagree than agree	Neither agree nor disagree	More agree than disagree	Strongly agree
1	2	3	4	5

12. I delayed working because the manager made negative comments.

Strongly disagree	More disagree than agree	Neither agree nor disagree	More agree than disagree	Strongly agree
1	2	3	4	5

13. I thought the manager was genuinely apologetic.

Strongly disagree	More disagree than agree	Neither agree nor disagree	More agree than disagree	Strongly agree
1	2	3	4	5

14. I believed the purpose of the study was the same one expressed by the researcher during training.

Strongly disagree	More disagree than agree	Neither agree nor disagree	More agree than disagree	Strongly agree
1	2	3	4	5

15. I performed better because of the apology.

Strongly disagree	More disagree than agree	Neither agree nor disagree	More agree than disagree	Strongly agree
1	2	3	4	5

16. On day 2, my performance would have been different if a block of neutral sessions would have occurred before the negative comments were given.

Strongly disagree	More disagree than agree	Neither agree nor disagree	More agree than disagree	Strongly agree
1	2	3	4	5

APPENDIX H: NO EFFECT RESULTS

Appendix H

No Effect Participants Results

