Examination of the Impact of Contingent Praise and Monetary Rewards on Intrinsic Motivation and Creative Performance

Merrilyn Akpapuna
Western Michigan University, makpapuna@gmail.com

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EXAMINATION OF THE IMPACT OF CONTINGENT PRAISE AND MONETARY REWARDS ON INTRINSIC MOTIVATION AND CREATIVE PERFORMANCE

by
Merrilyn Akpapuna

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Thesis Committee:
Douglas A. Johnson, Ph.D., Chair
Alyce M. Dickinson, Ph.D.
Heather M. McGee, Ph.D.
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EXAMINATION OF THE IMPACT OF CONTINGENT PRAISE AND MONETARY REWARDS ON INTRINSIC MOTIVATION AND CREATIVE PERFORMANCE

Merrilyn Akpapuna, M.A.
Western Michigan University, 2020

Despite many decades of debate, the question of whether or not extrinsic motivation is detrimental to intrinsic motivation and creativity continues to spark discussion among professionals (Cameron & Pierce, 1994). This is an important issue for business owners who do not want to stifle creativity and intrinsic motivation in an effort to increase productivity. Even though many authors have labelled extrinsic motivation as archaic and harmful (Deci, 1971; Kohn, 1993; Pink, 2009), the available empirical evidence does not match such levels of condemnation. The purpose of the present study was to compare the effectiveness of several interventions (performance-contingent money, performance-contingent praise, and performance-contingent money plus praise) in increasing creativity. Two within-subject multiple reversal designs were used to examine the impact that these interventions had on 27 college students. A hybrid within subject and between group analysis was carried out. The within subject analysis involved visual inspection of graphs and showed a slight downward trend across all phases, beginning with the first session. A two-factor ANCOVA showed that neither money nor praise increased creative performance. The results contradicted both the overjustification effect and behavioral accounts regarding the impact on external rewards, although methodological concerns need to be resolved before this statement can be made with confidence.
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INTRODUCTION

Organizational executives and business owners are increasingly turning their focus and priorities towards fostering creativity and innovation as a way of maintaining an advantage in today’s competitive marketplaces (Caniëls, De Stobbeleir, & De Clippeleer, 2014; Shalley, Hitt, & Zhou, 2015). This prioritization of producing creative ideas can be communicated to employees via memos, workshops, training sessions, and various meetings. When such initiatives fail to sustain behavior change, it is not uncommon to repeat these efforts with even greater intensity and frequency, only to be met with failure yet again (Braksick, 2007; Daniels, 2016). As such, business leaders may find themselves struggling with questions about how to best motivate their employees. In order to answer these questions, the issues of motivation and creativity must be considered.

The way motivation is typically defined is as a theoretical construct which is inferred as an explanation for observed behavior (McClelland, 1987). Unfortunately, this presents a problem for a behavior analytic approach which eschews such constructs in favor of more parsimonious and practical approaches to influencing behavior (Skinner, 1950). A behavioral translation of this concept can be achieved by noting the context in which a term such as “motivation” is commonly used (Skinner, 1945). Such an analysis would note that motivation is often used in reference to behaviors aimed at goals or incentives and how the direction and intensity of such behaviors can be modified (Latham, 2012; Luthans, 2010). For the purposes of this paper, motivation will be defined as “the process in which variables control and maintain goal directed behaviors” (D. A. Johnson & Akpapuna, 2018, p. 245). These variables can be defined in terms of environmental operations (common within behavioral conceptualizations) or inferred constructs (common within traditional conceptualizations). A review of how these factors are
approached within different theoretical frameworks may be warranted and will be discussed briefly.

**Traditional Theories of Motivation**

There are several traditional theories that account for the concept of motivation. One of the most popular of these theories is Abraham Maslow’s Hierarchy of Needs (Maslow, 1943). According to the most well-known version of this theory, there are five rank-ordered factors that influence whether or not we engage in goal-directed behaviors: physiological needs, safety needs, love and belonging needs, esteem needs, and self-actualization needs (in that hierarchical order).

Based on this theory, individuals do not attempt to fulfill higher-level needs until the lower-level needs have been nearly or completely satisfied. As such, sources of motivation may be constantly changing in a sequential manner and environmental experiences can cause individuals to regress back to an earlier source of motivation. Maslow (1943) labelled the lowest four needs as deficit needs and stated that an absence of any of these needs leads to a longing for them until a level of homeostasis is reached. The highest need is the self-actualization need and there is no limit to fulfilling it; however, Maslow believed only a few people would get the opportunity to engage with this motivational factor. Despite its intuitive appeal, this conceptualization poses several pragmatic concerns within a workplace context. To successfully employ this theory, managers would have to create programs to assess the unmet needs of each employee and contrive ways to meet them (Ramlall, 2004). In addition, the idea that one need must be met in order for an individual to strive for another need is not well-documented. It is possible for someone to need both shelter and a sense of connection simultaneously or to sacrifice a lower need in service of a higher need (e.g., neglect one’s physical health for social or
ideological reasons). The Hierarchy of Needs gives an incomplete explanation of motivation with no practical way to generate it and has been revealed to have no strong empirical support (Mowen, 2000). According to Maslow, creativity is characteristic of people who attain self-actualization (Maslow, 1968). Since only a few people ever attain self-actualization, this account asserts that only a few people can attain creativity, which is problematic if our goal is to generate creative people.

An extension of Maslow’s (1943) motivational approach can be seen with Clayton Alderfer’s theory, which abridged Maslow’s five needs into three: Existence needs, Relatedness needs, and Growth needs—known collectively as the ERG theory of motivation. (Alderfer, 1969). The Existence needs level is a condensation of the bottom two needs on Maslow’s Hierarchy of Needs. Relatedness needs include love and belonging needs and the external part of self-esteem needs, which is how we feel about ourselves based on how others view us. Growth needs include self-actualization needs and the internal part of self-esteem needs which is how we feel about ourselves based on how we view ourselves.

Apart from compressing Maslow’s theory (1943), Alderfer (1969) elaborated on it by stating that the levels are not as fixed as Maslow indicated. Thus, even though existence needs have a higher likelihood of influencing behavior, behavior can be influenced by multiple needs at the same time. This theory is more practical than Maslow’s Hierarchy of Needs as it included specific measures of the three needs; however, not all research supports this theory (Miner, 2002). This suggests that Alderfer’s theory may not be well grounded and might also possess some of the flaws seen with Maslow’s theories—in that it does not provide a practical method to motivate people. Similar to Maslow’s account where creativity falls under self-actualization,
Alderfer’s theory establishes that creativity is part of the growth needs but his theory lacks an explanation of ways to meet these needs.

Sixteen years after Maslow (1943) proposed his theory, Frederick Herzberg introduced another alternative theory called the Two-Factor theory of motivation (Herzberg, Mausner, & Snyderman, 1959)—also known as motivation-hygiene theory or dual-factor theory (Herzberg, 1974). Herzberg’s Two-Factor theory of motivation posited that satisfaction and dissatisfaction are two independent phenomena that are affected by different variables: satisfiers and dissatisfiers. Satisfiers (motivators) are inherent to work requirements and if present, bring about satisfaction, whereas their absence results in a lack of satisfaction (but does not lead to dissatisfaction). Motivators include meaningfulness at work, growth and promotional opportunities, sense of achievement, recognition, and responsibility for work. Dissatisfiers (hygiene factors) are not inherent to the workplace and do not promote satisfaction; however, their absence will produce dissatisfaction (Armstrong & Taylor, 2014). Hygiene factors include fringe benefits, interpersonal relations, job security, company policies, pay, and status. A major criticism of this theory is that the assumptions underpinning the relationship between satisfaction and motivation have not been well supported by evidence (Opsahl & Dunnette, 1966). That is, despite the frequent references to terms like motivators, is has not been established that such factors motivate various types of performance. As such, productivity and creativity, two major goals of many organizations, do not appear to be well accounted for with this theory. Despite this flaw, this is one of the earliest theories to discuss the issue of internal versus external sources of motivation.

Another motivational theory proposed by McClelland (1961) departed from the previous theories in that it highlighted the diversity of human motivation and placed a stronger emphasis
on the environment. His theory of needs asserts that human behavior is influenced by three major needs: need for achievement, need for power, and need for affiliation. These needs are not innate and are developed through the environment and learning experiences. The need for achievement is related to the need to succeed and meet goals that are set by one’s self. The need for power is related to influence over other people and the need for affiliation is the need for interpersonal relationships. Even though people might be motivated by a combination of these needs, McCleland argued that one particular need will be stronger than the others for each individual. To determine which of the needs is stronger, it is necessary to rely on self-reports of individuals.

According to McCleland’s theory (1961), inferences can be made about how idiosyncratic motivations of leaders impact their behavior and style of leadership, which directly affects their subordinates. People with a strong need for achievement often make the best managers; however, they have a tendency to require too much of themselves and their employees. People with a strong need for power are likely to show traits like commitment and determination but do not possess the flexibility and people skills required to be a good leader. People with a strong need for affiliation tend to be “people pleasers” and often cannot make tough decisions that need to be made regarding employees and thus would not be good managers. McClelland asserts that a person’s needs may change with training.

The limitation of this theory, like other needs theories, is that managers who want to motivate their employees need to fulfill their needs, which is impractical (Fisher, 2009). Furthermore, self-reports are relied on to determine what need a person is motivated by. This can be a drawback because self-reports are often biased and are not an objective measure of behavior. Creativity falls under the need for achievement; like previous theories, McClelland (1961) does not present ways to satisfy this need.
The last traditional theory to be considered here emphasizes both innate and environmental considerations. The X-Y theory of motivation—proposed by Douglas McGregor in his book, *The Human Side of Enterprise* (1960)—tries to document two basic styles of management using theories of human motivation. Theory X suggests that to get the average person to do a job, managers and supervisors need to cajole, pressure, and threatened loss of a job because the average person has a lack of interest and initiative to perform independently. The average person does not enjoy work and will not do it if granted the opportunity to avoid it (Bobic & Davis, 2003). Theory Y, on the other hand, states that managers do not need to reward or punish the average person to engage in goal-directed behaviors because the average person tends to work hard in achieving their goals; and does not need to be constantly guided to perform a task. The average person tends to take initiative and usually enjoys their job.

These theories have several implications for management. Under theory X, managers need to engage in a high degree of guidance with their employees and be firm and rigid to ensure that employees are doing their job. This lack of autonomy is said to stifle the creativity of employees (Bobic & Davis, 2003). Under theory Y, the managerial burden of performance monitoring and policy enforcement is greatly reduced; in fact, it is essential that managers are flexible and grant their employees freedom on how they engage in job tasks. Theory Y management is said to be the more productive of the two approaches. It is asserted that theory Y grants employees space to grow, develop their skills, and be creative while theory X management tends to limit the abilities of employees. However, as was the case with the previous theories, caution should be exercised with theories based on limited empirical evidence and excessive assumptions.
In general, traditional theories of motivation tend to rely heavily on theoretical constructs and there is often the implication that motivation is primarily innate. Such conceptualizations provide little in the way of practical guidance for employers: some workers are motivated and others are not. These assumptions are not well grounded in evidence and there have been few research efforts supporting these theories, which may be due in part to their conceptualization as variables that are not easily manipulated or assessed by researchers. This feature not only makes research difficult, it also makes selection of employees possessing such hypothetical constructs difficult. Individuals tasked with hiring decisions struggle to identify prospective employees with unobservable attributes and if these constructs are not stable phenomena, then this task is made even more difficult. In many ways, it seems that the successful selection of highly motivated employees seems to be the “luck of the draw” and once hired, there may be little to be done with “innate” sources of motivation. This quickly leads to a very impractical state of affairs if the organization needs to build a large workforce purely with the right traits.

There are many factors that influence goal-directed behaviors; some of them are observable and others are not. Most times, there are multiple factors controlling behavior which is evidence of the complexity of the human behavior (McGee & Johnson, 2015). While all theorists presume that they can fully account for the complexity of employee behavior in the workplace, traditional theories tend to focus on constructs that are difficult to manipulate as causal variables, such as traits and personalities, whereas behavioral conceptualizations typically focus on factors in the environment that can be more directly manipulated. Managers often have control of the environment their employees work in and are the ones most likely to make changes to factors in the environment that could then control and maintain the strength of goal-directed behaviors.
Behavioral Conceptualization of Motivation

Unlike many traditional theories of motivation, behavioral theories of motivation ground their conceptualizations in terms of environmental operations. Although various theorists may argue about the completeness and comprehensiveness of such a perspective, it does readily lend itself to developing strategies for assessing and engineering motivation. Often, a behavioral conceptualization of motivation is dismissed by those with an incomplete understanding of behavior analysis. Many of the traditional industrial / organizational psychology textbooks highlight behaviorism as “reinforcement theory” which is misleading since reinforcers are not the only consequences and consequence manipulations are not the only way to control and maintain behavior—antecedent manipulations are a major way to change behavior. Behavior analysis is seen as useless in dealing with higher mental activities and complex forms of behavior; however, a consideration of covert events such as higher mental activities was essential to Skinner and his acceptance of private events separated modern behaviorism from the behaviorism of the early 1900s (Skinner, 1945). Also, behavior analysts do not support the restriction of its use to just simpler forms of behavior (McGee & Johnson, 2015).

Limited or improper applications of the principles of behavior analysis can lead to failed results which may be inappropriately blamed on the field as opposed to the way in which the principles were applied. Any intervention is likely to fail if it is not implemented correctly. However, when implemented with integrity, this account provides employers with useful tools to make and keep their employees motivated. Business owners can focus on hiring skilled and trainable employees and then motivating them rather than looking for people who are already motivated. In so doing, there is an expansion of the pool of potential employees from which they can select.
Lack of motivation is not the only cause of low productivity. There are two general reasons why an employee might not engage in relevant job performance: they do not know how to do it or they do not want to do it (Mager, 1997). There are also two general approaches for modifying such job performance: alterations to antecedents and changes to consequences. In situations for which the employee doesn’t know quite how to perform appropriately, antecedent manipulations such as task clarifications and job aids may be all that is needed (Daniels & Bailey, 2014). For cases in which the employees do not want to perform their jobs, antecedent manipulations such as motivating operations may be more appropriate. With situations where the employee knows how to engage in a task but does not, consequence manipulations are more appropriate. Consequence manipulations include reinforcement, punishment, and extinction. Reinforcement is commonly employed in an effort to modify behavior as it appears to be relatively simple and in comparison to punishment, it is more socially acceptable. An extensive literature has documented the many variations of implementing these environmental motivators (Malott, 1992; Malott & Shane, 2013; Mayer, Sulzer-Azaroff, & Wallace, 2013; Michael, 2004; Skinner, 1969).

**Criticisms of the Behavioral Approach**

With a flawed understanding of behavior analysis, scientists from a non-behavioral orientation might inappropriately employ reinforcement in an effort to change behavior and then claim that it does not work when it fails. However, the problem is not necessarily with the theory of reinforcement, given the robust literature documenting the validity of this principle. Some of the discrepancies observed between theorists of differing perspectives can be accounted for by terminological confusion with the terms such as “reward” and “reinforcer.” By definition, reinforcers increase the future frequency of a behavior (Daniels, Daniels, & Abernathy, 2006).
They should not be confused with rewards which are stimuli believed to have a positive effect on behavior, but lack the demonstration of such an effect (Peters & Vollmer, 2014). Even with an understanding that reinforcement increases behavior, many eschew the implementation of this principle because it is believed to have detrimental side effects when removed. For example, some researchers have condemned it on the basis that when it is taken away, it reduces future interest in the activity that was reinforced and inhibits creativity (e.g., Amabile, 1982; Deci, 1971; Kohn, 1993; Lepper, Green, & Nisbett, 1973; Pink, 2009).

**Intrinsic versus Extrinsic Motivation**

Intrinsic motivation is used to explain the “drive” behind behaviors that have no apparent rewards. These are behaviors for which we cannot find any rewards except the activity itself (Deci, 1975). Extrinsically motivated behaviors are those for which some sort of reward separate from the activity itself can be identified. Intrinsically motivating tasks are usually interesting and challenging; and intrinsic motivation is believed to increase creativity and extrinsic motivation is believed to decrease it (Amabile, 1982).

The typical way of distinguishing between the two types of motivation is by casual observation of the behavior and the potential causal variables—an approach that is quite likely to be incomplete and possibly misleading. For example, a young painter might be labelled as being intrinsically motivated because she received no apparent rewards for producing creative paintings. However, the limitations of a brief observational period may lead to erroneous conclusions. The painter’s behavior might be reinforced by the smile of her mother when she sees it or the praise she receives from her teacher—events which may be infrequent and easily overlooked. The painter’s father might have given her a card when she was little that said she would be an amazing artist. These are factors that often cannot be easily accounted for and show
how blurred the line between intrinsic and extrinsic motivation can be. Furthermore, the
distinction is often arbitrary. For instance, the painter may apply various colors and shades to a
canvas. The resulting sight of a painting may be said to be an intrinsic source of motivation. That
same painter may apply various colors and shades to another person’s face. The resulting smile
of the person with fresh makeup may be said to be an extrinsic source of motivation. However,
the distinction may be trivial for analyzing the painter’s behaviors: Both artistic endeavors are
being maintained by visual consequences and whether they are socially mediated is irrelevant to
their production and maintenance.

The overjustification effect is based on the assumption that there is a fundamental
distinction between consequences that are socially mediated and consequences that are not
(Dickinson, 1989). A theory based on such an unstable foundation should be looked at with very
keen and suspicious eyes. The underlying mechanism responsible for the decrement in intrinsic
motivation following the introduction of extrinsic rewards is conceptualized in different ways.
The major cognitive accounts of this decrement include the cognitive evaluation theory and the
overjustification theory.

**Cognitive Evaluation Theory**

The cognitive evaluation theory was introduced by Deci (1975) to explain the effect of
extrinsic motivation on intrinsic motivation. Tasks that produce a heightened perception of
competence will increase intrinsic motivation and tasks that do not produce this assessment will
decrease intrinsic motivation. Another assumption of this theory is that extrinsic rewards
negatively affect the view of competence and therefore diminish intrinsic rewards.

This theory makes a clarification that not all extrinsic rewards are bad. Unexpected
tangible rewards and rewards that are not dependent on performance do not seem to negatively
impact intrinsic motivation. On the other hand, expected tangible rewards and rewards that are dependent on performance have an adverse effect on intrinsic motivation as they have a detrimental effect on the perception of autonomy and competence (Deci, Koestner, & Ryan, 1999).

In this same reasoning, affirmative feedback can be advantageous to intrinsic motivation if it is not perceived to be the source of control of behavior. Another reason why affirmative feedback—for example, praise—is considered beneficial in motivating individuals is that it is often difficult to establish it as an expected reward and it almost never negatively impacts one’s sense of autonomy and competence.

**Overjustification Effect**

Another major explanation of the decrement of intrinsic motivation as a result of extrinsic rewards is the overjustification theory. A key aspect of this theory revolves around factors that individuals perceive as controlling their actions (Eisenberger & Cameron, 1996). If an individual performs an action without any salient consequence, they will believe themselves to be self-motivated and continue to initiate actions. If a salient consequence follows their actions, they may come to believe their actions are only justified in terms of receiving rewards and there is no rational reason to perform independently. So, if an employee is motivated by an interest in their job and an employer implements a performance-contingent reward system for a while and then stops it, that employee will no longer be motivated by their interest in the job. This change is implied to be permanent which might explain the reason why extrinsic rewards are sometimes shunned.

The overjustification hypothesis does not account for different types of extrinsic rewards. Some studies have concluded that salient rewards do not produce the overjustification effect
(Eisenberger & Armeli, 1997). This is contrary to studies by Deci and Ryan (1985), Amabile (1983), and Lepper et. al. (1973) that show that salient rewards, like money, tend to have a higher negative effect on intrinsic motivation and creativity than less salient rewards (Eisenberger & Armeli, 1997). Several publications have explored the implications of extrinsic and intrinsic motivation, including the bestseller *Drive* by Daniel Pink (2009). With the exception of a single sentence describing his book *Punished by Rewards* (Kohn, 1993), Pink makes little mention the work of Alfie Kohn. Nonetheless, the arguments advanced by Pink will sound reminiscent to behavior analysts who wrote extensively against Kohn’s suggestions to minimize and eliminate extrinsic rewards (Dickinson, 1989; Eisenberger & Cameron, 1996).

**Daniel Pink’s Argument**

Pink (2009) begins his book by introducing the concept of operating systems, arguing that, similar to computers, societies also have operating systems that govern how they function. He defines these operating systems as the instructions, assumptions, and protocols that cause us to function the way that we do and underlie the laws, customs, and economic arrangements of society. He proposes the existence of three major operating systems: Motivation 1.0, Motivation 2.0, and Motivation 3.0.

Similar to Maslow (1943) and Alderfer’s (1969) hierarchies, Motivation 1.0 presumes that humans are driven by basic needs such as food, water, sex, security, etc. This operating system served humanity well decades ago when the species was overwhelmingly preoccupied with trying to simply extend its existence. However, humans are no longer in these primitive times of hunting and gathering and thus this operating system was eventually “upgraded” to Motivation 2.0, which presumes that humans are also driven by rewards and punishers beyond mere survival and reproduction. Pink (2009) explains that Motivation 2.0 has an underlying
assumption that humans are similar to other animals and could be made to engage in behaviors by the allure of the carrot or the threat of the stick. “Carrots and sticks” is a common metaphor used to refer to simple reinforcement and punishment procedures.

Pink (2009) asserts that this second system has also run its course and is in need of yet another upgrade because it has three major incompatibility problems. First, it does not align with what most businesses are organizing to do which is to have their employees be “purpose maximizers” rather than “profit maximizers”. In other words, business owners are searching for employees who are intrinsically motivated, as opposed to extrinsically motivated. Second, it does not line up with the more “enlightened” thought of employees as full-fledged human beings rather than single-minded economic robots or other animals which can be made to act simply by implementing rewards and punishers. Third, it is difficult to merge Motivation 2.0 with the tasks of the modern workplace, which are typically creative, interesting, and self-directed (“heuristic”) rather than routine, boring and other-directed (“algorithmic”).

Extrinsic rewards and punishment may work for algorithmic tasks but are detrimental to heuristic tasks which depend greatly on intrinsic motivation (Pink, 2009). By citing a business magazine published by a management consulting firm (B. C. Johnson, Manyika, & Yee, 2005), Pink argues that only 30 percent of job growth will come from algorithmic work, whereas as 70 percent will come from heuristic work, further suggesting that an upgrade from Motivation 2.0 to Motivation 3.0 is needed. Pink further states that baseline compensation for the workplace is necessary because without it, employees will be unsatisfied and focused on the unfairness of the situation—similar to the logic of Herzberg’s hygiene factors (Herzberg, 1974). However, his argument extends past Herzberg’s view of dissatisfaction in that he argues that once past this minimum threshold, further extrinsic motivation can destroy intrinsic motivation; reduce high
performance; negatively affect creativity; decrease good behaviors; increase unethical behaviors such as cheating and shortcuts; cause individuals to be addicted to it; and promote short-term thinking. Pink moderates his stance by arguing that extrinsic motivation is not always detrimental and it remains particularly beneficial with algorithmic tasks. Pink emphasizes that non-salient rewards such as praise are more effective in increasing behaviors related to heuristic tasks—in alignment with publications such as Deci and Ryan (1985), Lepper et al., (1973), and Amabile (1983)—and are even more effective when comprehensive feedback is given. Pink’s recommended upgrade, Motivation 3.0, presumes that humans are not only motivated by basic needs, rewards, and punishers but also possess higher drives such as the motivation to learn, to create and to better the world—much like self-actualization in Maslow’s Hierarchy of Needs (Maslow, 1943). The three major components of this operating system include autonomy, mastery, and purpose.

Autonomy implies that employees should have control over what tasks they engage in, when they engage in those tasks, how they engage in those tasks, and with whom they engage in those tasks. Autonomy, as Pink maintains, is not equivalent with independence and therefore does not suggest an absence of accountability. Mastery is “the desire to get better and better at something that matters” (Pink, 2009, p. 109). This definition of mastery is very different from the typical view of mastery as being equivalent to proficiency; in this case, mastery is described in terms of the process that brings about proficiency. Mastery involves an inquisitive mind that acknowledges that there is no limit to skill improvement. It requires perseverance, hard work, and continuous practice. Unlike the maxim of “practice makes perfect,” in the case of Pink’s interpretation of mastery, perfection is impossible: which further increases curiosity. Another
major factor that highlights mastery is a willingness to experiment and this is attributed to the fact that there is no end goal when it comes to mastery and the process itself is the goal.

Purpose provides a framework for the components of autonomy and mastery in the Motivation 3.0 operating system. The goal of generating profit alone is inadequate to motivate human beings. It is argued that humans need goals that are greater than themselves. These goals should involve using profits to make benevolent changes in the society on the employee’s terms. Pink further clarifies that profit maximization can be accommodated in Motivation 3.0, it just has to be accompanied by purpose maximization.

Ultimately, Pink’s (2009) philosophy is a distillation, incorporation, and refinement of previous theories, many of which were raised either implicitly or explicitly against a behavioral model of human motivation. Although these ideas are being proposed as new innovations, they are actually well aligned with the centuries old conceptualization of humankind as the ultimate initiator of action (Skinner, 1938), harkening back to Romanticism philosophy of the late 18th century (Eisenberger & Cameron, 1996). Although these debates over motivation are not new, the assertion that the growing need for more creative endeavors from employees now necessitates a new motivational approach is of relatively recent provenance. Despite the many conflicting views of motivation, creativity, and their relation to one another, there fortunately exists the grand resolver for science: empirical evidence. Just as it is important to define what is meant by motivation, it is also important to define what is meant by the even more contentious concept of creativity before exploring the empirical literature. Although it is impossible to find a universally agreed upon definition (Epstein, 1980), operationally defining it as “the production of novel behavior that is valued by others and not the result of imitation, rule following, or minor variation” seems to fit the most common verbal practices of the social community (Kubina,
Morrison, & Lee, 2006). The empirical support that was cited by Pink against the use of extrinsic rewards is limited and has been examined in more detail elsewhere (D. A. Johnson & Akpapuna, 2018). However, many other studies have been dedicated to this topic.

**Motivation and Creativity**

Although intrinsic motivation has been said to foster creativity while extrinsic motivation restricts it, it has been found that rewards can actually increase the likelihood of creative behaviors occurring. For instance, Byron and Khazanchi (2012) found that rewards would increase creativity—presuming that such rewards were actually contingent upon creative performance (as opposed to routine behaviors that are sometimes studied). However, when individuals were unclear about the performance criterion or needed only very minimal task compliance to receive a reward, rewards had almost no effect on creative performance. Another finding of Byron and Khazanchi’s study is that choice is important and has been found to be positively correlated with creativity when creativity-contingent rewards are used. Eisenberger and Cameron (1996) arrived at similar conclusions when they stated:

…the only condition in which reward reduced creativity to a level less than that without reward involved the use of training with a small reward for a low degree of divergent thought. This result helps explain why prior studies, which used reward for minimal cognitive effort, obtained reduced creativity. As predicted by learned industriousness theory, reward for a high degree of divergent thinking increased generalized creativity, and reward for a low degree of divergent thinking decreased generalized creativity. The use of a large reward eliminated these effects, which follows from the view that salient reward may distract individuals from the current
task and from learning that the receipt of reward depends on creative performance.

(p. 1162)

Examples of studies supporting this notion were detailed by Winston and Baker (1985), who cited a variety of studies in which external rewards increased creativity. The vast majority of studies in this review examined the creative behavior of children. Of the few involving college students (Glover, 1980; Maltzman, Bogartz, & Breger, 1958), the reward consisted of either praise or points that counted towards a course grade. More recent research and reviews also tended to involve children and verbal praise as the external incentive (Byron & Khazanchi, 2012; Peters & Vollmer, 2014). A manuscript currently under development (D. A. Johnson, Bradley, Rocheleau, Akpapuna, Choi, Ireland, & Twyman, 2020) reviewed over 200 studies related to creativity and found no studies utilizing monetary incentives to increase creative performance with adults. This is critical because creativity research involving non-adults will probably do little to persuade individuals opposing the use of external rewards in the workplace. Furthermore, monetary incentives and praise are two variables readily available to workplace supervisors, yet little to no research has been done on these variables in relation to adult participants. As such, statements relevant to organizational innovation and employee creativity cannot be easily made with confidence. Therefore, the present study is being proposed to examine the impact that contingent consequences—both monetary and verbal—will have on creative performance.

**METHOD**

**Participants and Setting**

The participants were selected from the undergraduate student population at Western Michigan University. In order to be included in the study, the student had to be majoring or minoring in Art or have completed ART 1040 (Object Drawing), ART 1050 (Drawing Studio),
ART 1070 (Form and Surface), ART 1080 (Form and Space), ART 1200 (Introduction to Art), or a class with equivalent content. In total, forty-four participants were recruited for this study. Out of the 44, 6 were in an initial pilot test of the experimental procedures (an addendum provided in Appendix A was submitted to the HSIRB) and 38 were divided across the two experimental groups. From the 38, 11 were lost to attrition.

The flyer provided in Appendix B was distributed at various locations across campus in an effort to recruit students. Additionally, in-class recruitments were conducted using the script provided in Appendix C. When students responded with their interest in the study, the email provided in Appendix D was sent to them requesting their availability and the best way to contact them. In order to be included in the study, participants had to be able to meet scheduling demands and the program of study criteria.

All sessions, including the introductory sessions for the informed consent process and all debrief sessions, were conducted in Wood Hall, room 2521 (inside research hallway 2505). These are private enclosed spaces with desks and tables. A different room across research hallway 2505, room 2508, was used for grading purposes.

**Dependent Variable**

The dependent variables of interest in this study included novelty, quality, and value. Novelty and quality were quantified using the creativity grading sheet provided in Appendix E. The creativity grading sheet was developed based on informal conversations with art professors, a sampling of art rubrics from online resources, and an instrument developed by Besemer and O’Quin (1987). Novelty is defined by the uniqueness of the artwork; and, quality is defined by how aesthetically pleasing the artwork is. The creativity variable is simply the sum of novelty
and quality. Value was quantified using a table in Appendix F and was the amount participants were paid during phases with a pay condition.

For both novelty and quality, participants could get between 1 to 15 points depending on the considerations listed out in the creativity grading sheet provided. These considerations were broken down into novelty and quality components and points were ascribed to each consideration. Detailed explanation for each consideration, with notes about what points to ascribe are included in Appendix G. The sum of the total of the scores on novelty and quality informed the research assistant of the value of the piece of art. A different set of research assistants ran all the sessions. For the purpose of this study, the research assistants who ran the sessions were referred to as moderators. And, the research assistants who were solely responsible for grading the art pieces were simply referred to as research assistants. The participants’ scores were only known to the experimenter, moderators, research assistants, and participants themselves. The experimenter and moderators, however, were the only ones with knowledge of who the participants were. The research assistants identified the artwork by the individualized code of the participant. The experimenter and moderators maintained the confidentiality of the participants to ensure that the research assistants were not biased.

Two research assistants graded each piece of artwork and the score for each dependent variable was the cumulative of the two relevant scores, to help minimize idiosyncratic preferences of the evaluators. Research assistants went through two weeks of training to improve interobserver agreement (IOA).

**Research Assistant Training**

The research assistants went through two to three days of training for 30 minutes each day with the experimenter for two weeks. The training sessions involved carefully explaining
each factor in the creativity rubric. The experimenter then modeled how artwork should be
graded by grading sample artwork and explaining why each score was assigned. The research
assistants then graded different sample artwork. The experimenter collected IOA on each piece
of art and in order for a research assistant to complete training, he or she had to be at an IOA of
at least 80% with the experimenter on ten consecutive artwork grading efforts. Already trained
research assistants helped to train new research assistants. However, all research assistants had to
get an IOA of at least 80% with the experimenter in order to be approved to grade. Once
approved to grade, research assistants needed to maintain an IOA with each other of at least
65%.

Independent Variable

The independent variable was the type of reward provided to the participants. The
different rewards that were implemented in this research were performance-contingent praise,
performance-contingent money, and performance-contingent praise plus performance-contingent
money. Baseline data were collected for each participant.

For all conditions, the reward—praise and/or money—was given based on the creativity
of the product. In order to avoid confounds, all participants were presented with the same art
tools (pencils, palettes, pens, ink, paper, acrylic, watercolor, brushes, charcoal, and pastels) and
instructions to produce their artwork. For all conditions, the moderator read the script provided in
Appendix H at the beginning of the session and the relevant script provided in Appendix I at the
end of the session. All participants were given the sample drawing of a polar bear in Appendix J.
In addition to that, for the performance-contingent money and performance-contingent praise
plus money conditions, the moderator presented the participant with money based on the value of
the product.
**Experimental Design**

The study included two within-subject multiple treatment reversal designs - ABAD and ACAD. The four conditions included: (A) baseline, (B) performance-contingent praise, (C) performance-contingent money, and (D) performance-contingent praise plus money. There were 44 participants, 6 for the pilot study and 38 divided across two experimental groups (11 were lost to attrition). One group was subjected to the ABAD design while the other group was subjected to the ACAD design. Participants were randomly assigned to groups. For the C and D conditions, the amount of money given to participants was equal to the value determined using the rubric. For both groups, a $25 bonus was given to participants who completed all the sessions. There were 16 half-hour sessions in total: 3 sessions in each baseline phase and 5 sessions in each experimental phase.

**Experimental Procedures**

Students who indicated an interest in the research were contacted via email about possible meeting times including an introductory session. The introductory session was used to explain the research fully to potential participants, read over the informed consent document with them and have them sign it. The informed consent is provided in Appendix K. The introductory session was held in the same room as the research room. This is an enclosed room with a table and chairs. During this session, the potential participant and the experimenter agreed upon and scheduled the 16 half-hour experimental sessions. In addition, the researcher informed the participant that the experimental sessions would take place in the same room. If consent was provided, the experimenter randomly assigned the participant to one of the two groups.

At least two days before the introductory session, the participant was sent an email reminder about the time and venue of the session. This email is provided in Appendix L. It stated
that participants should send back an email confirming that they have read the email and will be present at the session. If the participant did not respond within two days, the experimenter or the moderator contacted the participant via the phone number provided.

At the beginning of each session, the moderator read the relevant script provided in Appendix H which included clear instructions on what was expected of the participants. The sample concepts were not explained in greater detail beyond simply listing the required concepts. After reading the script, the moderator went to a different section of the room in order to avoid distracting the participant and returned to the participant 20 minutes later to collect the artwork and ask the participant to wait a couple of minutes. The participants waited no longer than 5 minutes. During this time, the moderator ensured that the artwork did not include any information about the participant except the random individualized code.

Upon doing that, the moderator took the piece of art along with the participant’s previously completed pieces of art, if any, to a different room where two research assistants were present to grade the work. The first piece of art created by each participant was compared to the sample piece of art provided in Appendix J. The two research assistants were required to grade the artwork independently. The two scores were then cumulated and put into a spreadsheet which calculated the total percentage and value of the artwork. Then, the moderator returned to the research room and read the relevant script provided in Appendix I to the participant. The script that was read to the participant depended on the phase of the experiment and the participant’s score on the creativity rubric.

**Baseline.** Regardless of what the participant’s score was, the moderator read the following statement: “[Insert participant’s name], thank you for completing today’s session. You scored [insert percentage].”
**Performance-contingent praise.** Depending on the percentage of the artwork, the moderator read the statement (including praise) relevant to their score. A list of praise statements is provided in Appendix M and these statements were shuffled in order not to sound rote or insincere. These four praise statements were modeled after the statements rated as most supportive in a previous study (D. A. Johnson, Rocheleau, & Tilka, 2015). The statement read to the participant after each relevant session was randomly selected.

*If the participant had the same or a better score compared to the score of the previous artwork.*

“[Insert participant’s name], thank you for completing today’s session. You scored [insert percentage]. [Insert praise statement].”

*If the participant scored less than the previous score on the creativity rubric, the moderator read the following statement.*

“[Insert participant’s name], thank you for completing today’s session. You scored [insert percentage].”

**Performance-contingent money.** Regardless of the percentage, the moderator read the following statement:

“[Insert participant’s name], thank you for completing today’s session. You scored [insert percentage]. Here is [insert monetary value] for your work.” [Give participant monetary value]

**Performance-contingent praise plus money.** Depending on the value of the artwork, the moderator would read the statement (including praise) relevant to their individual score. Again, the specific praise statements can be found in Appendix M.

*If the participant had the same or a better score compared to the score of the previous artwork.*
“[Insert participant’s name], thank you for completing today’s session. You scored [insert percentage]. [Insert praise statement]! Here is [insert monetary value] for your work.” [Give participant monetary value].

If the participant scored less than the previous score on the creativity rubric, the moderator read the following statement.

“[Insert participant’s name], thank you for completing today’s session. You scored [insert percentage]. Here is [insert monetary value] for your work.” [Give participant monetary value].

Debriefing. Participants who completed all the sessions received the bonus of $25 and the moderator read the debriefing script provided in Appendix N to them.

Experimental Analysis

A hybrid within and between group analysis was carried out. A two-factor ANCOVA was used to analyze scores on each dependent variable: quality, novelty, and creativity (quality plus novelty). The covariate measure was the average of the first three scores on each variable. For the within subject analysis, graphs were made of each participant’s data on each variable and each graph was visually inspected for differential effects of the independent variables.

Interobserver Agreement

Interobserver agreement was used to ensure that recorded observations were accurate. The experimenter took IOA with the research assistants and the research assistants took IOA with each other. The formula that was used to calculate IOA was \((\text{Agreements}/ [\text{Agreements} + \text{Disagreements}]) \times 100\). If IOA was below 65%, the research assistant went through retraining. This retraining involved re-explaining and clarifying the components of the creativity rubric and grading sample paintings and drawings. The minimal acceptable level of agreement is low because creativity is a highly subjective concept and even though the rubric helps make it more
objective, it is expected that a large degree of subjectivity will be involved, much like real world conditions.

**RESULTS**

The raw and adjusted means for novelty plus quality, novelty, and quality in the baseline and experimental conditions for both the Praise and Money conditions are presented in Tables 1-3. Tables 4-6 display the results of the ANCOVA analysis for novelty plus quality, novelty, and quality. There were decreases in the means on all measures for all conditions except on the quality measure for the money condition. None of the effects were found to be statistically significant. There was an IOA average of 84% which ranged from 50% to 100%.

Table 1

*Raw and Adjusted Means for Praise and Money (Novelty plus Quality)*

<table>
<thead>
<tr>
<th>Condition</th>
<th>n</th>
<th>Covariate</th>
<th>Experimental</th>
<th>Adjusted Means</th>
</tr>
</thead>
<tbody>
<tr>
<td>Praise</td>
<td>13</td>
<td>71.7</td>
<td>65.9</td>
<td>66.22</td>
</tr>
<tr>
<td>Money</td>
<td>14</td>
<td>73.7</td>
<td>68.0</td>
<td>67.69</td>
</tr>
</tbody>
</table>

Table 2

*Raw and Adjusted Means for Praise and Money (Novelty)*

<table>
<thead>
<tr>
<th>Condition</th>
<th>n</th>
<th>Covariate</th>
<th>Experimental</th>
<th>Adjusted Means</th>
</tr>
</thead>
<tbody>
<tr>
<td>Praise</td>
<td>13</td>
<td>72.6</td>
<td>61.0</td>
<td>61.44</td>
</tr>
<tr>
<td>Money</td>
<td>14</td>
<td>75.8</td>
<td>62.9</td>
<td>62.47</td>
</tr>
</tbody>
</table>
### Table 3

*Raw and Adjusted Means for Praise and Money (Quality)*

<table>
<thead>
<tr>
<th>Condition</th>
<th>n</th>
<th>Covariate</th>
<th>Experimental</th>
<th>Adjusted Means</th>
</tr>
</thead>
<tbody>
<tr>
<td>Praise</td>
<td>13</td>
<td>70.8</td>
<td>70.7</td>
<td>70.82</td>
</tr>
<tr>
<td>Money</td>
<td>14</td>
<td>71.5</td>
<td>73.4</td>
<td>73.23</td>
</tr>
</tbody>
</table>

### Table 4

*Source Table for Analysis of Covariance (Novelty plus Quality)*

<table>
<thead>
<tr>
<th>Source</th>
<th>df</th>
<th>SS</th>
<th>MS</th>
<th>F</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Covariate N+Q</td>
<td>1</td>
<td>67.69</td>
<td>67.69</td>
<td>3.12</td>
<td>0.090</td>
</tr>
<tr>
<td>Reward</td>
<td>1</td>
<td>14.31</td>
<td>14.31</td>
<td>0.66</td>
<td>0.425</td>
</tr>
<tr>
<td>Error</td>
<td>25</td>
<td>543.08</td>
<td>21.72</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>27</td>
<td>644.34</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Table 5

*Source Table for Analysis of Covariance (Novelty)*

<table>
<thead>
<tr>
<th>Source</th>
<th>df</th>
<th>SS</th>
<th>MS</th>
<th>F</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Covariate N</td>
<td>1</td>
<td>55.69</td>
<td>55.69</td>
<td>1.25</td>
<td>0.274</td>
</tr>
<tr>
<td>Reward</td>
<td>1</td>
<td>6.94</td>
<td>6.94</td>
<td>0.16</td>
<td>0.696</td>
</tr>
<tr>
<td>Error</td>
<td>25</td>
<td>1114.21</td>
<td>44.57</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>27</td>
<td>1192.83</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Table 6

Source Table for Analysis of Covariance (Quality)

<table>
<thead>
<tr>
<th>Source</th>
<th>df</th>
<th>SS</th>
<th>MS</th>
<th>F</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Covariate Q</td>
<td>1</td>
<td>156.33</td>
<td>156.33</td>
<td>9.46</td>
<td>0.005</td>
</tr>
<tr>
<td>Reward</td>
<td>1</td>
<td>40.32</td>
<td>40.32</td>
<td>2.44</td>
<td>0.131</td>
</tr>
<tr>
<td>Error</td>
<td>25</td>
<td>412.98</td>
<td>16.52</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>27</td>
<td>620.87</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Figure 1 shows the average percentage of creativity for the ABAD group while Figure 2 shows the average percentage of creativity for the ACAD group. Data from participants who withdrew from the study (n=11) and data collected during the pilot study (n=6) were excluded from the analysis. As illustrated by the graphs, there is a persistent downward trend across all the phases on all the measures, except the quality measure, for both groups.

Figure 1. Percentage of novelty plus quality for ABAD group.
Figure 2. Percentage of novelty plus quality for ACAD group.

Figure 3. Percentage of novelty for ABAD group.
Figure 4. Percentage of novelty for ACAD group.

Figure 5. Percentage of quality for ABAD group.
DISCUSSION

The downward trend seen beginning with the second session on all the graphs contradicts both the overjustification theory and a behavioral speculation of the impact of rewards on behavior. According to the overjustification effect, incentives would increase performance and then withdrawal of incentives would reduce performance below baseline levels for the foreseeable future (Deci, 1971; Roane, Fischer, & McDonough, 2003). A behavioral speculation would be that, if the money and praise given were indeed reinforcers, there would be an increase in creativity in those conditions. If the money and praise given were not reinforcers, then performance should remain steady with little or no change.

The steady decline in performance is seen even in the money and praise conditions. This decline is present for all groups on the novelty measure, with a slight upward trend in quality. There are several possible explanations for this phenomenon. One explanation is that the first time coming up with a novel idea is easier than the second time and each subsequent attempt would get progressively more difficult. The design of the present study did not take such

Figure 6. Percentage of quality for ACAD group.
considerations into account. Components of the rubric that participants did progressively worse on was using different techniques and tools between pieces of art. Another component that participants struggled with in general was successfully including a symbol in the piece of art in a way that is uncommon. This component was perhaps particularly difficult because it required participants to think in unconventional ways.

Participants were asked to draw a polar bear for all sixteen sessions and asked to incorporate two new concepts each session. This was done to enable easy detection of changes in creativity between sessions; however, it might have limited the ability of the participants to be creative. A potential solution to this would be to further vary the concept groups between sessions. Participants could be asked to draw different animals as opposed to just polar bears. This should reduce the difficulty in coming up with new ideas and may also have the added benefit of making the tasks more interesting. The experimenter assumed prior to the pilot study that it would be difficult to compare artwork that is overly dissimilar. Upon completing the pilot study, a more detailed rubric was created that could prove effective in grading artwork with even greater variance than the present study allowed for. Whether this is a relevant factor or not could only be accounted by running the study in both fashions. For example, it was possible that being given the option to select from a variety of animals could actually inhibit more creative performances as participants simply insert new animals in hopes that such minimal effort would be considered creative, whereas a consistent theme may force participants to think about other novel factors besides just animal type. Furthermore, restricting the range of options may be more representative of applied work in which clients are looking for novelty, but still want some common elements (e.g., company logos, mascots, etc.).
Another option would be to have a more problem-focused instruction. For example, instead of telling participants to draw a polar bear and incorporate fun and fear, the experimenter could create a detailed scenario that involves a specific need and ask participants to develop a drawing that meets that need, such as “Company XYZ is a nonprofit that works to conserve polar bears and their sea ice home; they are looking to create a flyer that is attractive to the younger generation, one that evokes strong emotions and pushes them to donate.” Rietzschel et. al. (2014) showed that a more narrow and specific problem scope will lead to more creative solutions. In addition to that, the experimenter should explicitly inform participants that elements previously included in their drawings will not be considered creative in future sessions. As the present case stands, it is possible that the participants believed that only minimal cognitive effort was required (since the instructions did not create an elaborate scenario, but only to include certain elements). Such minimal cognitive effort is one of the considerations researchers such as Eisenberger and Cameron (1986) had warned as being detrimental to creativity. Although the task did require fair amount of cognitive effort (e.g., tracking past performances, incorporating thematic elements, diversifying techniques and tools over time, etc.), the instructions may not have made this performance requirement sufficiently clear to participants. Participants could also have slowly reduced their effort because they did not understand what behaviors were producing the rewards. Although care was taken to clarify some of the performance criteria for the participants (i.e., by specifically naming the objects and themes that needed to be featured), additional factors may not have been sufficiently clarified (i.e., the importance of utilizing a variety of techniques and tools). This was done to provide direction to the participants without being overly prescriptive. However, Mager (1997) explained that lack of essential antecedents can negatively impact behaviors. Participants may have been motivated to increase effort but not have known how to
do so due to a lack of direction or needed prerequisite skills. It may be relevant for future studies to assess the incoming knowledge of various tools and techniques to a greater extent than whether the participants had enrolled in art classes (after all, it is possible that such classes may not have provided a breadth of training in art techniques or tools).

Another possible explanation is that participants were in the study for a reason independent of the experimental manipulations (e.g., extra credit for coursework) or the incentives were not sufficiently powerful to impact behavior. If such were the case, then participants may have only put in minimal effort necessary to remain as a participant in the study, resulting in a lack of improvements across time. The decreasing trend could also be due to the fact that the participants gradually lost interest in the task and the first introduction to the task produced more of an interest which led to increased performance. This could be further tested with a study that measures interest, as opposed to, or in addition to, creative performance. Interest could be measured using the time spent on the task or via periodic surveys during the experiment.

In conclusion, while previous behavioral studies have shown that rewards have a positive impact on creative performance (Byron & Khazanchi, 2012; Eisenberger & Cameron, 1996; Peters & Vollmer, 2014), several authors in support of the overjustification theory have stated that rewards have a negative impact on future creative performance (Amabile, 1983; Deci & Ryan, 1985; Lepper, Green & Nisbett, 1973). The purpose of the current study was to assess the validity of the overjustification theory and to compare the effects of different types of reward in increasing creative performance. While this study did not produce results that support the overjustification theory, it also failed to yield the anticipated results. Further research, that takes the limitations of the current study into account, is needed to analyze the overjustification theory.
REFERENCES


Appendix A

Recruitment Flyer
Date: August 30, 2018

From: Douglas Johnson, Principal Investigator
       Merrilyn Akpapuna, Student Investigator

Re: HSIRB Project Number 17-12-27

To whom it concerns,

Upon completion of the pilot part of the study, we have made several improvements and refinements. The updated version of the proposal is included with this document and all the changes made are highlighted.

Due to logistical issues and resource limitations, we reduced the number of sessions from 20 to 16, the number of graders from 3 to 2, and the time for the informed consent and debriefing from an hour to 30 minutes. The total time commitment has now reduced from 11 hours to 8.5 hours (3 sessions each for both baseline conditions and 5 each for the other 2). Participants are still able to make between $25 - $75 since only the baseline sessions were reduced. We previously expected that participants will complete all the sessions within 10 weeks but we changed that to “over the course of the semester”. All relevant appendices were revised to show the changes mentioned.

In addition, we found that sessions were sometimes going a little over the 30-minute mark, so, we have reduced the work time to 20 minutes with 5 minutes for grading and 5 minutes for the provision of instruction. We revised the scripts to be read to participants after they complete their work to ensure that participants are provided with their score for every session, regardless of the condition. We received a lot of interest from students who have not taken an art class and since that is a requirement to participate in the study, we have included it in the recruitment script. The list of considerations for novelty and quality and the script read to participants at the beginning of the sessions were further developed based on knowledge we gained through the running of the pilot study. The praise statements were revised to sound more colloquial.

We hope this updated version meets the HSIRB standards and we look forward to your feedback.

Thank you,
Douglas Johnson
Merrilyn Akpapuna
Appendix B

Recruitment Flyer
**Research Participants Needed**

I am currently seeking individuals to participate in a study designed to determine the effects that different rewards have on motivation and creative performance.

Participants will earn between $25-$75 if they complete the study in its entirety.

**Time Commitment:** A brief initial introductory meeting, a brief follow-up meeting, and sixteen 30-minute sessions over the course of the semester. The total time commitment for the study is approximately 8.5 hours.

If you are interested in learning more about this study, please contact the email listed below. Be sure to provide your name, e-mail and/or telephone number, and the times you can be reached. All information is confidential.

Thank you!

E-mail: merrilyn.o.akpapuna@wmich.edu
Appendix C

In-class Recruitment Script
Recruitment Script

Hello, my name is ______________ and I am working with Merrilyn Akpapuna in the Instructional Design and Management Lab here at Western. We are currently looking for individuals to participate in a study designed to determine the effects that different rewards will have on motivation and creative performance.

Participation would require a brief initial introductory meeting, a brief follow-up meeting, and sixteen 30-minute sessions over the course of ten weeks. The total time commitment for the study is approximately 8.5 hours. Participants will earn between $25-$75 if they complete the study in its entirety.

Your participation is completely voluntary and you may withdraw at any time. Your willingness to participate in this study or your withdrawal from this study at a later time will not hurt your grade in this class or any other class. The only requirement to participate is that you have taken an art class.

I have a sign-up sheet going around if you would like to learn more about this study. You can also contact Merrilyn Akpapuna by emailing her at merrilyn.o.akpapuna@wmich.edu. The email address for Merrilyn is also printed on the board behind me.

Thank you for your time!
Appendix D

Email Script
Hello ________.

Thank you for your interest in my study. Before you begin your first session, I need you to meet with me or one of my research assistants so that he or she can explain the study to you, and you can make a decision as to whether or not you would like to participate. The only requirement is that you have taken an Art Class. You do not have to be an expert at painting or drawing. Assuming you decide to participate, we will also schedule your second meeting at this time. Furthermore, if you decide to participate, we will begin your first full session immediately following this initial meeting. You should allow 30 minutes for each of these sessions and we will be asking you to complete 16 sessions in total. If you decline to participate, you will not begin the first session, and the initial meeting will take no more than 15 minutes.

If you complete all 16 sessions within the semester, you will earn $25, regardless of your performance during sessions.

Please send me the days and times you are available to meet during the next week, and I will schedule your initial meeting.

Best,

Merrilyn Akpapuna
Appendix E

Grading Sheet
# List of Considerations for Novelty and Quality

<table>
<thead>
<tr>
<th>Participant ID:</th>
<th>Grader:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Session:</td>
<td>Date:</td>
</tr>
</tbody>
</table>

### Novelty Grading Considerations

<table>
<thead>
<tr>
<th>Consideration</th>
<th>Circle one</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. The artwork is thematically different from previous artwork</td>
<td>0 1 2</td>
</tr>
<tr>
<td>2. There are thematic differences within the artwork</td>
<td>0 1 2</td>
</tr>
<tr>
<td>3. Different tools were used in the production of the artwork</td>
<td>0 1 2</td>
</tr>
<tr>
<td>4. Different shades of light and dark were employed in the production of the artwork</td>
<td>0 1 2</td>
</tr>
<tr>
<td>5. Different techniques/styles were used within/between artwork (Some examples include caricature, line art, sketch, stick figure, shading, stippling, etc.)</td>
<td>0 1 2</td>
</tr>
<tr>
<td>6. Different perspectives between artwork</td>
<td>0 1 2</td>
</tr>
<tr>
<td>7. Unique elements were used in the artwork</td>
<td>0 1</td>
</tr>
<tr>
<td>8. Different colors were used in the artwork</td>
<td>0 1 2</td>
</tr>
<tr>
<td>9. Successfully used a symbol or part of the drawing as something else other than its original use</td>
<td>0 1</td>
</tr>
</tbody>
</table>

### Quality Grading Considerations

<table>
<thead>
<tr>
<th>Consideration</th>
<th>Circle one</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. All the parts of the artwork fit together and the artwork is understandable</td>
<td>0 1 2</td>
</tr>
<tr>
<td>2. The artwork is clearly a product of the instruction (If it’s a polar bear, check this and you can check 3 and 4 if applicable; if it’s not a polar bear, considerations 2, 3, and 4 should not be checked.)</td>
<td>0 1</td>
</tr>
<tr>
<td>3. Product of part 2 of the instruction</td>
<td>0 1</td>
</tr>
<tr>
<td>4. Product of part 3 of the instruction</td>
<td>0 1</td>
</tr>
<tr>
<td>5. The artwork is presentable, not rough</td>
<td>0 1 2</td>
</tr>
<tr>
<td>6. The artwork is complete. It is clear that the participant completed what they were working on</td>
<td>0 1 2</td>
</tr>
<tr>
<td>7. The artwork is complex and appears effortful. The participant put a significant amount of work in it for the time they were given. The artwork included a great amount of detail</td>
<td>0 1 2</td>
</tr>
<tr>
<td>8. The color combination used looks appealing. If no color, the artwork looks nice (aesthetically pleasing).</td>
<td>0 1 2</td>
</tr>
<tr>
<td>9. The artwork has depth (seems more 3D than 2D)</td>
<td>0 1 2</td>
</tr>
</tbody>
</table>

**Novelty:** /15  
**Quality:** /15
Appendix F

Value Metric
Value Metric

Value will be a function of the total percentage of creativity.

<table>
<thead>
<tr>
<th>Creativity Percentage</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>0% – 16.65%</td>
<td>$0</td>
</tr>
<tr>
<td>16.66% - 33.32%</td>
<td>$1</td>
</tr>
<tr>
<td>33.33% - 49.99%</td>
<td>$2</td>
</tr>
<tr>
<td>50% - 66.66%</td>
<td>$3</td>
</tr>
<tr>
<td>66.67% - 83.33%</td>
<td>$4</td>
</tr>
<tr>
<td>83.34% - 100%</td>
<td>$5</td>
</tr>
</tbody>
</table>
Appendix G

Grading Considerations Explained
Grading Considerations Explained

Be mindful that Novelty will probably take longer to grade than Quality!!

**Novelty Grading Considerations**
(Mostly comparisons between artwork except when stated that comparisons should be done within the artwork)

1. **The artwork is thematically different from previous artwork** – The artwork being graded has a different theme or set of themes from the previous artwork. A theme is the underlying message. When grading, consider what message the participant is trying to convey with the drawing. Do not count what the polar bear is doing as a theme or what the scenery is like but think about the message it is portraying like happiness, loyalty, friendship, heartbreak, fear, etc. A theme would almost always be a noun or an emotion so if you are thinking of a verb, it is probably not a theme. A state, feeling, or emotion would always be considered a theme. *Typically, if the participant follows the instruction given, they would get this point. If the artwork includes themes that have been used before in previous art products but not used together, it would qualify as thematically different and the participant should get the point for this consideration. For example, if a participant uses happiness as the message in session 1 and loyalty as the message in session two, and both happiness and loyalty as messages in session 3, they would get points for consideration 1 for all 3 sessions. Even though they have used happiness and loyalty as messages before, in session 3, they use them together for the first time.*

2. **There are thematic differences within the artwork** – *Give one point for one theme outside of the instructions and two points for more than one theme outside of the instructions.* Themes are messages within the artwork. For example, if there is a message of loyalty in the artwork and also a message of happiness and none of those are part of the instructions (polar bear + sleep + sad, for example), they should get two points.

   Sometimes, the instruction (concept groups) include two items that could be themes and sometimes they do not. In order to avoid letting this confound the final score, look for themes outside of the instructions for the day. Really study the artwork and think about what emotions the polar bear is projecting, what story you are getting from the polar bear and what the polar bear is being affected by. All emotions and feelings should be considered themes. *This is the only consideration in novelty where you are looking within the artwork and not between*

3. **Different tools were used in the production of the artwork** – The participant has access to different tools that can be used in the production of the artwork. The tools include pencils, charcoal, graphite, watercolors, crayons, markers, and oil pastels. For this consideration, you are trying to determine if a different tool was used in the production of the artwork being graded in comparison to previous artwork. For the first artwork, check to see if something other than a pencil was used. Be mindful that the crayons sometimes can look like the pencils so feel the page to see if it is waxy. If it is waxy, it is crayon. *Give an extra point if different tools were used within the artwork.*
4. **Different shades of light and dark were employed in the production of the artwork** –

The artwork has different shades of light and dark which gives it dimension. There has to be a part shaded lighter than the other (Slightly different colors can be used to show this). Just shading a painting is not what this consideration is. Again, there has be a part of the shading that is darker than the other or the shading needs to be done systematically so that the open space in the painting draws your eye to something or makes it stand out. In addition, the shading used should be different from the shading used in previous artwork. Below is an example of different shades:

![Shading Example](image)

Give an extra point if the shading serves a different function than period shadings. Some functions include used to show depth, used to make a drawing 3D, used to show layers, used to portray a shadow, etc.

5. **Different techniques/styles were used within/between artwork** (Some examples include caricature (certain characteristics of the artwork are exaggerated to create a comic or grotesque effect), line art (use of straight lines to create an image), stippling (using small dots/specks), sketch (a rough drawing with the major features of the subjects being drawn, typically wispy lines, not well define), shading (shading was used), defined drawing (I am classifying this technique as defined drawing for lack of a better term). This is similar to sketching except the drawing is more defined. It looks like the artist did not raise the tool used to produce the art a lot) – The participant employed a different technique than used in previous sessions or used multiple techniques not used together in a previous session. For the first artwork, look to see if multiple techniques were used within the artwork. **Give an extra point if multiple techniques are used within the artwork.**

6. **Different perspectives between the artwork** – The subject of the artwork is placed in a different angle than it is placed in previous artwork. In determining perspective, consider where the head, body and legs are facing. A polar bear can be standing at very different angles from the person grading or could be lying down, standing up, laying on its back, etc. All these should be considered in assigning this point. For both of the pictures below, the perspective is the same as the head and body of both polar bears are facing right and the legs are underneath them. The fact that the polar bear on the left is walking can be disregarded for the first point given.
However, *Give an extra point if the subject of the artwork (polar bear) is doing something different than they have done in previous artwork. For first artwork, compare with sample polar bear.* Using the above pictures, the participant will get a point for the second drawing because even though the perspective is the same, the polar is doing something different which is just standing.

7. **Unique elements were used in the artwork** – The artwork included something apart from a polar bear or something distinct was added to the drawing of the polar bear. For example, the polar bear has a scarf on or the polar bear is standing on grass or a slab of ice; or, more generally, the background/setting is different. These are all unique elements if they have not been used in the participant’s previous artwork. For the first painting, just look to see if there is anything in the artwork other than a standard picture of a polar bear.

8. **Different colors were used in the artwork** – For the first artwork, just determine if the artwork includes any colors. For the ones afterwards, determine if colors separate from the ones used before are used. Also, look at the combination of colors used. For example, if a participant uses red in the second artwork and hasn’t used red before, they should get a point. If they then use white in the third painting, they should get a point for that drawing. In the fourth drawing, if they use red and white they should also get a point because even though they have used red and white in previous drawings, they have not used them together. *Give an extra point if more than two colors are used in the artwork.*

9. **Successfully used a symbol or part of the drawing as something else other than its original use (for this consideration, you are looking for an element of surprise)** – This might be a difficult point to give. The artwork needs to have incorporated something for a purpose other than its original purpose. For example, scarves are not made for polar bears, so, if a polar bear is wearing a scarf, they should get the point. This consideration has some similarities with consideration 7. Most likely, if a participant gets the point for consideration 9, they would have gotten the point for 7. For example, if a polar bear is drawn standing on a slab of ice, while that is a unique element and a point should be given for consideration 7, it’s not abnormal for a polar bear to be standing on ice. However, if a polar bear is standing on a skateboard, that qualifies as both a unique element and a surprising element. There has to be something other than the polar bear for the participant to get this point, so, something like waving won’t be considered a surprise element even though it is surprising because there is nothing separate from the polar bear but talking if there is a bubble of words would be considered a surprise element.
Quality Grading Considerations
(Comparisons are not done between artwork. You are only considering the artwork being graded except when stated otherwise)

1. All the parts of the artwork fit together and the artwork is understandable – The different parts of the drawing fit together. There is no part of the drawing that seems out of place. Think about whether or not you know what the artist drew. Think about whether or not it is vague. **Give one point for it fitting together and an extra point if the drawing makes sense.**

   Fitting Together - One point is for the different parts of the drawing making sense to be together (nothing in the drawing seems out of place in the sense that it was an afterthought or it just doesn’t fit in the picture. So, you are looking at the specifics for this point.

   Understandable - The other point has to do with the artwork as a whole (you are looking at the big picture) – does it make sense to you? If it does, then they get the other point.

2. The artwork is clearly a product of the instruction (If it’s a polar bear, they should get a point for the second consideration and can get points for the third and fourth consideration if applicable; if it’s not a polar bear, they cannot get points for the second, third and fourth considerations) – The participants are given three words at the beginning of each session to incorporate in their artwork. Following the instruction means that they incorporated some interpretation of the word in their artwork. The first word will always be polar bear and they are expected to always draw polar bears.

3. Product of part 2 of the instruction – They can only get this point if they got the point for consideration 2 and followed part 2 of the instruction. For example, if part 2 of the instruction is “happy” and there is a picture of a polar bear smiling or holding a sign with the word happy on it, the participant will get the point for both consideration 2 and 3. If it is a picture of a dog smiling, they will not get any points for considerations 2, 3 and even 4. If it is a picture of a polar bear angry and there is nothing about the picture that shows happiness, the participant will get a point for consideration 2 but not for consideration 3.

4. Product of part 3 of the instruction – Similar to consideration 3, they can only get a point for consideration 4 if they got the point for consideration 2 and followed part 3 of the instruction. They do not need to have gotten the point for consideration 3 to get this point.

5. The artwork is presentable, not messy – For this, the artwork needs to be neat considering that the participant only had 20 minutes to complete the drawing. The paper should not be crumpled or messy. The artwork itself should also not be messy. If colors are used, they should not be significantly outside the borders of the drawing. If there are parts of the drawing that seem out of place, take the point off consideration 1. **Give one point if the presentation is okay with only a few rough marks and an extra point if it is very neat and well put together (not rough at all).**
6. **The artwork is complete.** It is clear that the participant completed what they were working on – This is about whether or not the participant finished what they were drawing/painting. The way you determine this is you check to see that the parts they started drawing were completed. You have to first know what the drawing actually is. If you don’t, then you should be taking the point off consideration 1. Basically, in order to be able to determine that a drawing is incomplete, you have to first know what the participant was trying to draw. For example, a participant will lose this point if he or she did not finish drawing the legs of the polar bear. **Give one point if the bare minimum (look at the sample for what consists bare minimum – something that looks like legs, eyes, nose, ears, body, and mouth (I added mouth for those drawings where the polar bear is facing you and not looking to the side like the sample drawing)) of the main subject (polar bear) is complete and the other point should only be given if there are additional things drawn and those additional things are complete. Detailing of the polar bear is something additional.**

7. **The artwork is complex and appears effortful.** It appears as though the participant put a significant amount of work in the time they were given. The artwork included a great amount of detail – A way to gauge this is to consider how many components are included in the drawing, how complex those components are and how detailed those components are. **Give a zero if a stick figure was drawn or something as minimal as the sample polar bear, one point if the work is somewhat complex (that is it could have easily be done in 20 minutes) and an extra point if it is very complex and you can’t believe it was done in 20 minutes.**

8. **The color combination used looks appealing/the artwork is aesthetically pleasing** – For this if colors are used and they look good together, you should assign a point. If no colors are used or only one color is used, determine if the drawing is aesthetically pleasing (that is it looks good). **If the use of color is okay, give 1 point. Give 2 points* if it is a great use of color or if it is way better than the previous drawings. For the first drawing/painting do not compare with sample.** *This is the only quality consideration where you will be looking between and you will only be looking between for the second point.

9. **The artwork has depth (seems more 3D than 2D)** – Assign a point is the artwork has depth. With 3D artwork, you are able to tell which components are in front and which ones are behind. **Whether you give one or two points depends on how clear of a 3D picture it is.**
Appendix H

Beginning of Session Script
Script to be read at the beginning of each session
Thank you so much for coming in today. For the purpose of this study, imagine you have been hired to create a picture of a company's mascot. You are allowed to draw or paint the picture. The instruments you use are all up to you. You can use all of the art supplies in this room. The mascot for the company is a polar bear and every session, you will be asked to incorporate different concepts to your drawing/painting. For this session, make sure your drawing/painting incorporates the following concepts [Supply one of the group of concepts listed below depending on what session it is]. This is an example of a picture of a polar bear that is not really creative [Give participant sample polar bear]. Try to be creative. Make sure your work is original, aesthetically pleasing, understandable, and presentable. You have 20 minutes to do this. Here is a timer [Give participant timer].

Concept Groups

1. Polar Bear + Sleep + Sad
2. Polar Bear + Jungle + Discomfort
3. Polar Bear + Tunnel + Relaxing
4. Polar Bear + Fun + Fear
5. Polar Bear + Plant + Comfort
6. Polar Bear + Transportation + Fun
7. Polar Bear + Work + Anxious
8. Polar Bear + Frustrated + Hungry
9. Polar Bear + Sad + Work
10. Polar Bear + Happy + Stroll
11. Polar Bear + Fun + Work
12. Polar Bear + Fun + Excited
13. Polar Bear + Animal + Care
14. Polar Bear + Wild + Scared
15. Polar Bear + Lonely + Old
16. Polar Bear + Search + Wild
Appendix I

End of Session Script
Scripts for Baseline and Intervention
(to be read at the end of each session)

Baseline

(Insert participant’s name), thank you for completing today’s session. You scored (insert percentage).

Performance-contingent praise

Depending on the percentage of the artwork, the moderator will read the following statement:

If the participant had the same or a better score compared to the score of the previous artwork.

“[Insert participant’s name], thank you for completing today’s session. You scored [insert percentage]. [Insert praise statement].”

If the participant scored less than the previous score on the creativity rubric, the moderator read the following statement.

“[Insert participant’s name], thank you for completing today’s session. You scored [insert percentage].”

Performance-contingent money

Regardless of the percentage, the moderator will read the following statement:

“(Insert participant’s name), thank you for completing today’s session. You scored (insert percentage). Here is (insert $value) for your work.” (Give participant $value).

Performance-contingent praise plus money
Depending on the value of the artwork, the moderator will read the following statement:

*If the participant had the same or a better score compared to the score of the previous artwork.*

“[Insert participant’s name], thank you for completing today’s session. You scored [insert percentage]. [Insert praise statement]! Here is [insert monetary value] for your work.” **[Give participant monetary value].**

*If the participant scored less than the previous score on the creativity rubric, the moderator read the following statement.*

“[Insert participant’s name], thank you for completing today’s session. You scored [insert percentage]. Here is [insert monetary value] for your work.” **[Give participant monetary value].**
Appendix J

Sample Polar Bear
Appendix K

Informed Consent
Western Michigan University
Department of Psychology

Principal Investigator: Douglas A. Johnson, Ph.D.
Student Investigator: Merrilyn Akpapuna, B.A.
Title of Study: Examination of the impact of rewards on creativity and motivation

This consent document will help you understand what the research entails, its purpose and what will be required of you if you decide to participate. Please read the entire document carefully and do not hesitate to let me know if you have any questions or need clarification.

What is the purpose of the study?
The purpose of this study is to determine the effects that various outcomes have on creative performance.

Where will the study take place?
All sessions in this study will be conducted in Wood Hall, room 2521 (inside research hallway 2505).

What will be expected of you if you decide to participate in this study?
If you decide to participate in this research effort, you will be asked to draw or paint a picture during each session and your performance will be evaluated and measured. Based on your performance, you have the potential to earn rewards. You will also receive feedback on your creative performance. Preselected research assistants who have been trained for the purpose of this study will be grading your art work.

What is the time commitment for participating in this study?
If you agree to participate in this study, you would be asked to complete 16 half-hour sessions over the course of the semester and attend an introductory session and debrief session of 15 minutes each which would total 8.5 hours.

What are the risks of participating in the study?
No risks are expected for participating in this study. However, there might be a little discomfort with seating in one spot for approximately 30 minutes which can be offset by taking short breaks if needed. There might also be discomfort with the evaluation of art work.
What are the benefits of participating in this study?

This study may not provide you with any direct benefits. However, the investigators hope to gain knowledge from this research that will help the science community.

What are the costs or compensation associated with participating in this study?

There is absolutely no cost to you for participating in this study. You have the potential of earning between $25 and $75 for participating in this study.

Who will have access to the information gotten during this study?

Results from this study may be published in a journal or presented at a conference; however, information identifying you will be reported anonymously. Your name will not be linked to any of this information and any all information gotten will remain strictly confidential.

What if you decide to withdraw from the research?

Your participation in this research is completely voluntary. You can decide to stop participating at any point in the research process. You will not experience any personal, professional or academic penalty for deciding to stop participating in the study.

The investigator can also decide to stop your participation in the study without your consent.

If you have any questions prior to or during the study, you can contact the principal investigator, Douglas A. Johnson at (269) 387-4424 or douglas.johnson@wmich.edu. You may also contact the Chair, Human Subjects Institutional Review Board at 269-387-8293 or the Vice President for Research at 269-387-8298 if questions arise during the course of the study. This consent document has been approved for use for one year by the Human Subjects Institutional Review Board (HSIRB) as indicated by the stamped date and signature of the board chair in the upper right corner. Do not participate in this study if the stamped date is older than one year.

I have read this informed consent document. The risks and benefits have been explained to me. I agree to take part in this study.

Please Print Your Name

________________________________________
Participant Signature

________________________________________
Date
Appendix L

Reminder Email
Hello ______,

I’m sending you a reminder that your session is scheduled for ______ at _________. I look forward to our meeting. Please let me know if you have any questions.

Best,

Merrilyn
Appendix M

Praise Statements
Praise Statements

1. Your score was impressive. Keep up the great work!
2. You did great and we’d love to see you continue doing so!
3. Nice! We’d love it if you kept doing this well!
4. Keep at it! We’d like to continue seeing performance like this.
Appendix N

Debriefing Script
Debriefing Script

Thank you so much for completing the study. As you were informed during the introductory session, you will be given $25 simply for completing the study. Here you go (Give the participant $25). I would like to spend some time discussing the purpose of the study with you.

The purpose of the study was to determine the effects that extrinsic rewards (such as money and praise) have on intrinsic interest (interest in completing a task for the sake of it) and on performance on a creative task. Information about this is especially beneficial for business owners in making decisions about engineering and incentivizing creativity.

Once you agreed to participate in the study, you were randomly assigned to one of two groups. The major difference between the two experimental groups is that one group was exposed to a performance-contingent money alone condition and instead, the other group was exposed to a performance-contingent praise alone condition. Both groups were exposed to a performance-contingent praise plus money condition.

Please do not discuss details about this research with anyone as we are still conducting the research.

Do you have any questions?
Appendix O

HSIRB Research Approval Letter
Date: January 29, 2018

To: Douglas Johnson, Principal Investigator
    Merrilyn Akpapuna, Student Investigator for thesis

From: Amy Naugle, Ph.D., Chair

Re: HSIRB Project Number 17-12-27

This letter will serve as confirmation that your research project titled “Examination of the Impact of Contingent Praise and Monetary Rewards on Intrinsic Motivation and Creative Performance” has been approved under the expedited category of review by the Human Subjects Institutional Review Board. The conditions and duration of this approval are specified in the Policies of Western Michigan University. You may now begin to implement the research as described in the application.

Please note: This research may only be conducted exactly in the form it was approved. You must seek specific board approval for any changes in this project (e.g., you must request a post approval change to enroll subjects beyond the number stated in your application under “Number of subjects you want to complete the study”). Failure to obtain approval for changes will result in a protocol deviation. In addition, if there are any unanticipated adverse reactions or unanticipated events associated with the conduct of this research, you should immediately suspend the project and contact the Chair of the HSIRB for consultation.

Reapproval of the project is required if it extends beyond the termination date stated below.

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

Approval Termination: January 28, 2019