

The Effects of External Rewards on Intrinsic Motivation

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Abstract

For over 30 years now, there has been an intense debate on the effects of external rewards on intrinsic motivation. The answer to this question appears to depend on two properties of a reward: control and information. Though many professions have utilized rewards to control behavior with students, athletes, and children, it appears that this very controlling mechanism is what undermines intrinsic motivation. Conversely, an informational message of competency can enhance intrinsic motivation. Therefore, the way the reward is delivered will determine its effects on intrinsic motivation. In this context, the purpose of this paper was to analyze the effects of various rewards on intrinsic motivation. Rewards will be analyzed using the well established Cognitive Evaluation Theory.

Introduction

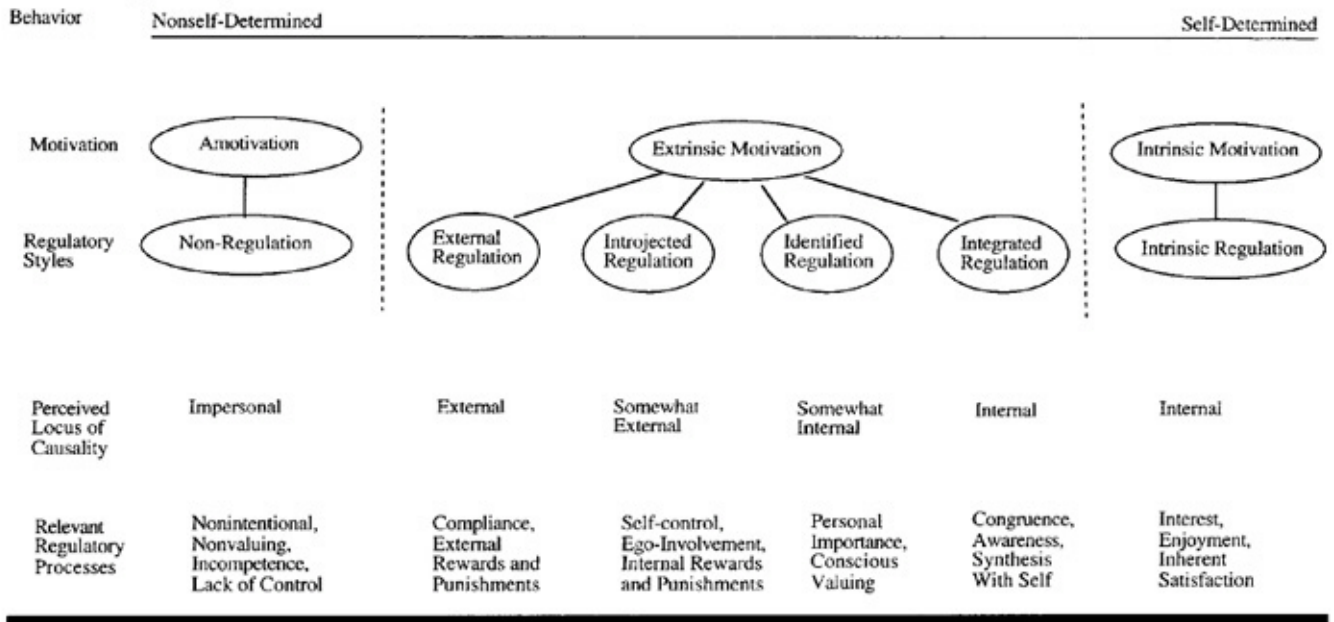
We shall begin this article with a short story (McCullagh, 2005). Once there was a man, who lived in a house and had a lawn. And kids would come to play on this mans lawn to have fun. The man began to be annoyed by this, and decided to do something about it. So, strangely enough...he paid them a dollar to come play on his lawn. The kids happily took the dollar and played on his lawn. The next day, the man told the kids that he did not have enough money, so he could only give them 50 cents to come play on his lawn. On the third day, he told them he could only give them a nickel to come play on his lawn. The kids were displeased with this, and told the man he could forget that, and that they would not play on his lawn for such a cheap reward. What happened? These kids played on his lawn before for absolutely nothing, but now, they quit playing, even though they were offered a nickel! Well, it just so happens that this man understood an important concept in Sport Psychology. That is, the effects of external rewards on intrinsic motivation.

Intrinsic & Extrinsic Motivation

Motivation can be defined as the intensity and direction of effort (McCullagh, 2005). Intensity refers to the quantity of effort, while direction refers to what you are drawn too. Evidence suggests that enhanced motivation promotes learning, performance, enjoyment, and persistence in sport, among other benefits (McCullagh, 2005; Wilson, 2005). Therefore, methods to enhance motivation have been thoroughly investigated.

There are two forms of motivation: intrinsic and extrinsic motivation.

Figure 1
The Self-Determination Continuum Showing Types of Motivation With Their Regulatory Styles, Loci of Causality, and Corresponding Processes



Adapted from Ryan and Deci (2000)

Figure 1 graphically depicts the various forms of intrinsic and extrinsic motivation, and amotivation. These definitions are discussed below.

Intrinsic motivation can be defined as an individuals need to feel competency and pride in something (McCullagh, 2005). Therefore, athletes who are intrinsically motivated participate in sports for no apparent reward other than the satisfaction and pleasure they get from the activity itself. There are 3 types of intrinsic motivations (Weinberg & Gould, 2003):

- Knowledge
- Accomplishment
- Stimulation

Being intrinsically motivated for *knowledge* occurs when athletes participate in activities because of the pleasure and satisfaction they get from learning, acquiring, and studying something new in their sport. This would include learning how to squat, or refining your pattern on deadlifts.

Being intrinsically motivated for *accomplishments* occurs when athletes participate in activities because of the pleasure and satisfaction they get from mastering various skills. For example, reaching a goal of squatting 400 pounds, or acquiring perfect form on deadlifts.

Being intrinsically motivated for *stimulation* occurs when athletes participate in activities because of pleasant sensations such as danger, pain, or excitement. For example, the rush you get when lifting heavy in the weight room, or posing down on stage.

Extrinsic Motivation can be defined as performance of an activity in order to attain some separate outcome (Ryan & Deci, 2000). Therefore, athletes that are extrinsically motivated participate in sport for external causes such as rewards, positive feedback, recognition, etc.; rather than for the inherent satisfaction of performing the activity itself (intrinsic motivation). There are 4 types of extrinsic motivations (Weinberg & Gould, 2003):

- Integrated regulation
- Identified regulation
- Introjected regulation
- External regulation

Integrated regulation occurs when athletes perform activities to benefit different aspects of life, rather than for the pleasure of participating itself. For example, training and dieting hard in order to develop a healthy life style.

Identified regulation occurs when athletes participate in an activity because the activity is considered of high value and important to the participant, even if they do not enjoy the activity itself. The difference between this and integrated regulation, is that this is limited to the particular activity itself. For example, lifting weights to become huge. Or going to school, or doing your homework because it is a great way to learn about things which may be useful to you.

One important concept to understand is that these two forms of extrinsic motivation (more so with integrated regulation) and the three forms of intrinsic motivation all involve the athlete participating in sports by their own initiative, because they *want* to participate for some desired outcome (autonomous). Therefore, these 5 subtopics of motivation have been found to positively influence affective, behavioral, and cognitive functions (Vallerand, 1997; Vallerand and Rousseau, 2001).

Introjected regulation occurs when athletes participate in an activity because of various pressures. For example, lifting heavy, or posing in the weight room, so you can impress people in the gym. Or training so that you can get huge, and gain self recognition and approval from others. Evidence suggests that Introjected regulation increases tension and anxiety (Nikos, 2001). An outcome oriented mentality (click [Here](#) for more information), in which ones worth is on the line, and their self esteem is contingent on the outcome, is another example of introjection.

External regulation occurs when athletes participate in an activity only because they feel they have to, or because they may get a reward. For example, playing for the money, or telling someone if you do such and such, I'll give you such and such. This activity is performed entirely for the reward.

The last term to discuss is *amotivation*. This is when an athlete is neither intrinsically or extrinsically motivated, and therefore, do not have any reason to participate in an activity. For example, a kid in P.E. class, who sits down on the ground and writes letters on the ground while his/her peers are playing baseball.

It is important to understand that people have various forms of motivation; therefore, you can be both externally and internally motivated. However, results indicate that individuals who are intrinsically motivated (and or have the two forms of autonomous extrinsic motivation), compared to those who are controlled by others to perform an activity (extrinsically motivated) have more interest, excitement, fun, and confidence, which leads to enhanced performance, creativity, persistence, vigor, general well-being, and self-esteem, among other benefits (Ryan & Deci, 2000). For instance, Frederick and Ryan (1993) found that intrinsic motivation facilitated a greater amount of hours and days per week of exercise and sport participation, and greater levels of satisfaction and competency, compared to extrinsic motivation, which facilitated greater anxiety, and decreased self-esteem. Similarly, Hodgins, Yacko, Gottlieb, Goodwin and Rath (2002) found that intrinsically motivated rowers had greater performance than extrinsically motivated rowers.

Therefore, ways to enhance intrinsic motivation are of the utmost importance for athletes. In this context, the purpose of this paper was to discuss the effects of rewards on intrinsic motivation.

Theories on the Effects of External Rewards on Intrinsic Motivation

It was originally thought by many that extrinsic rewards would enhance motivation for a task that was already intrinsically motivating. This seemed as simple as 1 (external reward) + 1 (already present intrinsic motivation) = 2 (more motivation). But as usual, the concept is not this simple. For over 30 years, there has been an intense debate over the effects of extrinsic rewards on intrinsic motivation; particularly, its ability to *undermine* intrinsic motivation. First, it is important to understand that all research is theory driven (Sawyer, 2005).

Theories are vital to research because they offer a framework for many areas of research aimed at the nature of the topic, address possible mechanisms, and suggest several specific interventions (McCullagh, 2005). Therefore, before we get into studies and experiments on this topic, we need to discuss some theories.

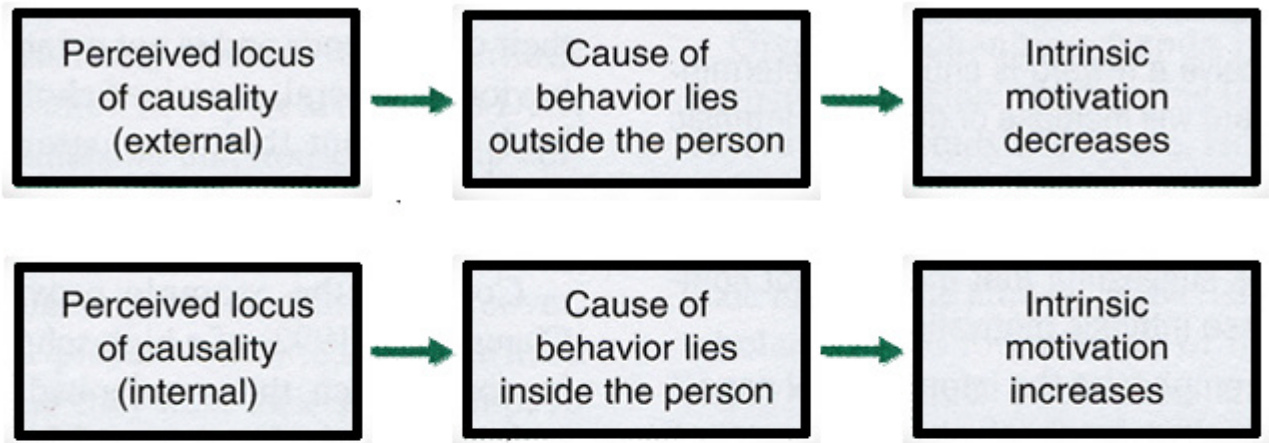
Self Determination & Cognitive Evaluation Theory

Deci, Ryan, and others developed what today is the most well established theory on the effects rewards have on intrinsic motivation—*Self Determination Theory* (SDT; Deci, 1975; Deci & Ryan, 1985). This theory suggests that humans have three central psychological needs, which are relatedness, effectance, and autonomy. Deci and Ryan (1994) summarize these needs in the following quote: “people are inherently motivated to feel connected to others within a social milieu (relatedness), to function effectively in that milieu (effectance), and to feel a sense of personal initiative in doing so (autonomy)” (p.7). Notice the term “inherently”. This theory suggests that humans have an innate tendency to develop these needs. Nevertheless, these needs do not develop automatically; they must be furnished by the environment, which can either promote growth, or impede it.

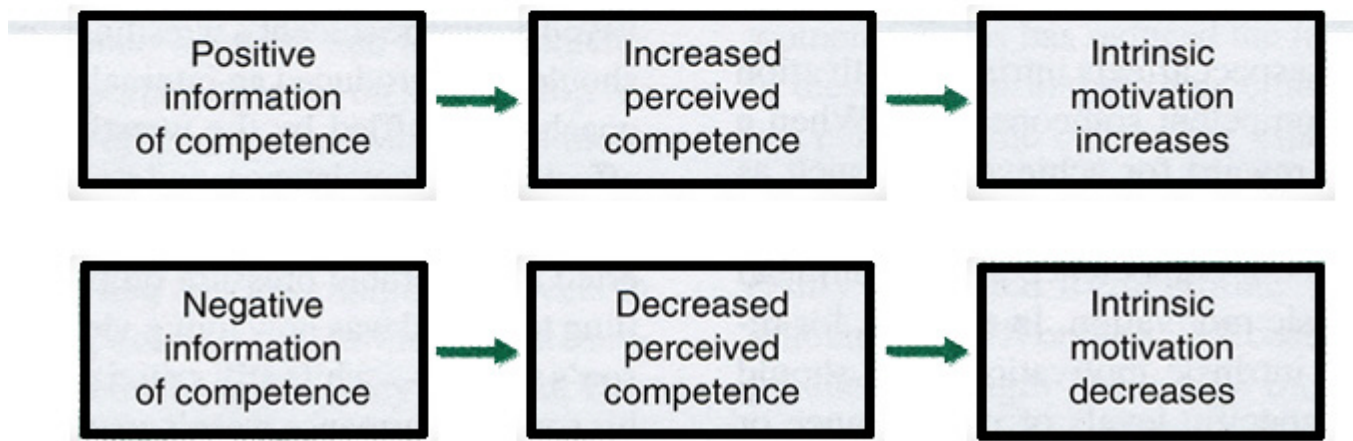
While, this theory focuses on intrinsic motivation, it does not say what causes it. In this context, Deci and Colleagues developed a sub theory to SDT, known as *Cognitive Evaluation Theory* (CET; Ryan & Deci, 2000).

CET focuses on factors which can increase or decrease intrinsic motivation. In essence, this theory suggests that rewards have two basic properties that can influence intrinsic motivation: *information* and *control*. And these properties can increase or decrease intrinsic motivation depending on how they effect an individuals self determination and competency.

a Controlling aspect of a reward



b Informational aspect of a reward



Adapted from Weinberg and Gould (2003)

Figure 2

The Effects of Rewards on Intrinsic Motivation

Figure 2 graphically depicts the effects rewards can have on intrinsic motivation. These effects are discussed below.

The informational aspect of a reward relays information about a person's competency. MVP rewards, All Star Selections, Sandow Trophies, among other rewards, all relay that the person receiving the reward is competent. CET suggests that if the informational aspect of a reward relays that the person is competent, this will enhance intrinsic motivation. Thus, a reward must be based on performance to enhance intrinsic motivation; at least, from an informational view point. Conversely, CET predicts that if a reward relays that the athlete is not competent, such as getting a last place reward, this will decrease intrinsic motivation.

The second property of a reward is the controlling aspect. This has to do with a person's *locus of causality*. Locus of causality is the degree people perceive their behavior to be freely determined (self determined) or caused by other people. If a person feels their behavior is caused by outside pressures from others, they would have an external locus of causality. If a person feels their behavior is self determined, or initiated, they would have an internal locus of causality. CET predicts that if a reward is perceived as controlling, people will attribute their behavior to an outside source (an external locus of causality). Conversely, if people do not feel controlled by the reward, they will attribute their behavior to self determination (an internal locus of causality). CET predicts that if a reward is perceived as controlling, it will decrease intrinsic motivation; but if a reward is not perceived as controlling, and the person has an internal locus of causality, intrinsic motivation will be high.

To elaborate on control and intrinsic motivation, people who have an internal locus of causality, feel that they participate in an activity because they want to (high intrinsic motivation); whereas, people who have an external locus of causality, feel that they participate in an activity because of an external cause (i.e. playing for the money). Therefore, "paying people off" can decrease their intrinsic motivation, because they may attribute their behavior to the money, rather than self determination. An example of something that would promote an internal locus of causality would be a coach who gives his athletes greater input on what drills are performed during practice. An example of controlling someone through a reward would be telling someone that you will give them such and such for doing such and such (external regulation). For example, telling a kid, "if you clean your room, I'll give you five dollars." In this scenario, the reward is controlling the persons behavior, rather than self determination.

The key aspect of this theory is the *perception* of the receiver of the reward. Someone who gives an athlete a reward may have the best intentions for the athlete; but if it is perceived as controlling, it will decrease intrinsic motivation. For example, if a player perceives that he/she is being rewarded with cars or money, only so that he will stay on the team, this will decrease his/her intrinsic motivation, because they will perceive the reward as controlling. Additionally, the reward giver should stress the informational aspect of the reward, making sure the player knows that the reward was given to them to show a sign of appreciation for their hard-work.

Rewards

Based on his research, the current author suggests that a reward can be defined as an external agent administered when a desired act or task is performed, that has controlling and informational properties. While rewards are typically delivered to increase the probability of a response, they can increase or decrease the probability

of an event occurring, depending on the saliency and direction of the controlling and informational aspects of the reward. Saliency would refer to the intensity of either the controlling or informational aspect of the reward. It is what stands out to you the most. While direction would refer to whether the reward is perceived as increasing or decreasing the athlete's control; and whether the information is perceived as positive (increasing the athlete's competency) or negative (decreasing the athlete's competency). Rewards can come in the form of verbal rewards (i.e. telling someone "good job!"), physical rewards (i.e. a pat on the back), or tangible rewards (i.e. giving someone money, food, or a medallion), among others. There are 5 basic types of rewards discussed in the literature as follows (Deci, Koestner, & Ryan, 1999):

- Task-Non contingent rewards
- Engagement contingent rewards
- Completion contingent rewards
- Performance contingent rewards
- Unexpected rewards

Task-Non contingent rewards are rewards given for just showing up for the study. In an experiment, a participant may be paid to just show up for the experiment, but they are not required to do anything. They could just sit around the entire time.

Engagement contingent rewards are rewards given for just participating in an activity, and not necessarily completing it. For example, an experimenter may pay a participant just to participate in an activity that involves making a puzzle, but they do not have to complete or perform well on the puzzle.

Completion contingent rewards are rewards given for completing a task.

Performance contingent rewards are rewards given for performance, usually based on a normative value. For example, doing better than 80% of the participants in a study. A sub category of performance contingent rewards are *competitively contingent rewards*. They involve rewarding individuals for defeating others.

Unexpected rewards occur when participants receive a reward after performing a certain behavior, but were not expecting to receive a reward.

CET makes several predictions on these types of rewards.

This theory predicts that unexpected rewards would not decrease intrinsic motivation, because the participant performed the task without knowledge of the reward; therefore, the controlling aspect of the reward would not be as salient, and participants would attribute their participation in the activity to an internal locus of causality. Because of the informational aspect, unexpected rewards may also enhance intrinsic motivation. But the administrator of the reward would have to give it based on high performance, and stress the informational aspect for it to be beneficial.

Non-contingent rewards do not require participating in the task, completing the task, or performing well on the task, and they deliver no information about the person's competency. Therefore, CET predicts they will not effect intrinsic motivation.

Both engagement and completion contingent rewards are predicted to typically cause the highest decrease in intrinsic motivation. This is because they contain a high controlling aspect, but deliver no information about the competency of the individual. For example, you could be paid for participating in an activity, but whether you perform well or not, is irrelevant. Therefore, these types of rewards say nothing about the person's competency, *and* decrease their control.

Performance contingent rewards are a lot more complex. While they can decrease control as engagement and completion contingent rewards do, they also relay a sense of competency. Therefore, CET predicts that if the information aspect is more salient for performance rewards, it may be able to counteract the controlling aspect of the reward. Additionally, whether the message is portrayed as controlling or not will also determine whether the reward decreases intrinsic motivation or not. Therefore, it is predicted by CET that generally, these rewards will decrease intrinsic motivation less than engagement and completion contingent rewards do.

Lastly, CET would suggest that verbal and physical rewards should enhance intrinsic motivation. This is because the informational aspect is very salient, while the controlling aspect is typically low. However, the controlling aspect can vary significantly depending on the delivery. This will be discussed more in practical applications.

Important note

This article is dealing with the effects external rewards have on intrinsic motivation for activities that are already intrinsically motivating to the individual. Rewards have an entirely different effect on activities that are boring to an individual. Therefore, these results should not be generalized to other scenarios. It also primarily makes predictions about when rewards are removed. Because while the rewards are being administered, this is a test of both extrinsic and intrinsic motivation. Lastly, CET does not make predictions on studies that combine verbal rewards with tangible rewards, because they would contribute to intrinsic motivation in opposite directions.

Studies on the Effects of External Rewards on Intrinsic Motivation

In a revolutionary study on the effects of external rewards on intrinsic motivation, Deci (1971) had participants play on an inherently interesting task, called the SOMA puzzle. Participants were paid to play, were given verbal rewards (i.e. verbally encouraged), or received no reinforcement for participating. Results found that participants who were paid money to play spent a significantly less amount of time (100 seconds) than participants who were not rewarded to play. Whereas, those who received verbal rewards, played for a longer amount of time than both conditions (intrinsic motivation increased).

Soon after this, Lepper and Greene (1975) performed a study called "Turning Play Into Work." Participants were nursery school children, who drew with felt pens, an intrinsically motivating activity. Participants were divided into three conditions. Condition one was the expected reward condition, in which the children agreed to draw a picture in order to receive a good player certificate (completion contingent rewards). In the unexpected reward condition, participants were unexpectedly given a reward after they completed the task. In the control condition, children received no

rewards for participating. One week later, participants were brought back in to play with the felt pens without any rewards. Results found that children in the expected reward condition decreased in intrinsic motivation; whereas, children in the other two conditions maintained intrinsic motivation.

Limits must often be set for various activities, such as education. In this context, Koestner, Ryan, Bernieri, and Holt (1984) investigated if limits could be set without decreasing intrinsic motivation. Participants consisted of 44 first and second grade students, engaging in a painting activity. Participants were given controlling verbal limits, informational verbal limits, and no verbal limits. Controlling verbal limits consisted of using various phrases such as, "I am going to tell you what you *have* to do now" "We have rules you *have* to follow" "I want you to be a good boy or girl." Whereas, children in the information condition were just told what the experimenters wanted them to do, instead of what they *had* to do. For example, "The smaller sheet is for you to paint on, the larger sheet is a border to be kept clean." Results found that intrinsic motivation, enjoyment, creativity, and quality of the artist product were decreased from the control condition, but not by the informational condition. Therefore, informational constraints may be an effective way to regulate behavior. This study supported cognitive evaluation theory. CET would predict that as control decreased, intrinsic motivation would decrease. Other studies have also supported these findings (Plant and Ryan, 1985; Deci, Koestner, & Ryan, 1999; Deci, Koestner, & Ryan, 1999, b).

While the purpose of this article is to discuss the effects of rewards on intrinsic motivation, CET has incredible implications for many areas of life. Rewards are just one of a broad array of techniques in which we control people and decrease their intrinsic motivation. Results show deadlines, evaluations, and imposed goals, all decrease intrinsic motivation (Deci, Koestner, & Ryan, 1999; Deci, Koestner, & Ryan, 1999, b; Ryan & Deci, 2000). Whereas, provision of choice, and acknowledgement of feelings, enhance intrinsic motivation (Deci, Koestner, & Ryan, 1999). These results are all centered on one key concept—control. It appears that using controlling language and actions consistently lowers intrinsic motivation. Plant and Ryan (1985) suggest that control is "any vocalization that pressures a person to behave a certain way." It is suggested that contextual factors that tend to control someone—such as pressure to feel, think or behave a certain way—lowers intrinsic motivation. For example, a mother who says, "you know what you should do" would be controlling compared to "what do you think you should do?" Or telling someone "Good job, you *should* keep up the good work" or "Good job, you are doing as you *should*." One experiment found that saying (Deci, Koestner, & Ryan, 1999) "I have not been able to use most of the data I got so far, but if you keep it up, I may be able to use yours" puts pressure on the person, decreasing his/her control. While the other participants were told, "compared to most of my subjects, you are doing really well" which resulted in more control, and higher intrinsic motivation. Therefore, how information is relayed is vital for how an individual perceives rewards and instructions. Numerous future articles can be written on the implications these theories have not only on bodybuilding, but everyday life—stay tuned.

Scholarships



The famous basketball player, Magic Johnson, was asked if he had received rewards when being recruited by college basketball teams. He stated that (Weinberg & Gould, 2003) "I received my share of offers for cars and money. It immediately turned me off. It was like they were trying to buy me, and I don't like anyone trying to buy me." According to CET theory, what Magic was really annoyed with was the controlling aspect of rewards. With hundreds of multi-million dollar contracts thrown around in sports today, of immense interest would be the effect of rewards on athlete's intrinsic motivation. To investigate this question, there has been a significant amount of research on the effects of athletic scholarships on intrinsic motivation.

In one of the earliest studies on the effects of athletic scholarships on intrinsic motivation, Ryan (1977, 1980; as cited in Frederick & Ryan, 1995) observed collegiate Division I football players on scholarships and not on scholarships. Ryan found that players who had scholarships did not enjoy football as much as non-scholarship athletes; further, scholarship athletes had less intrinsic motivation every year they had a scholarship, so that they had their lowest level of intrinsic motivation during their senior year!

However, in a similar case, results found that male wrestlers and female athletes from six different sports had *higher* intrinsic motivation than athletes who were not on scholarships.

These results may seem contradictory at first glance. However, CET may offer some helpful explanations.

As you recall, according to CET, there are two properties to a reward that influence intrinsic motivation—control and information. Therefore, CET would predict that the controlling and informational aspects of these rewards were different.

While scholarships can clearly be perceived as controlling, they also relay information of competency. Now, what determines whether a scholarship would decrease or increase intrinsic motivation is the saliency of the controlling and informative aspects of the reward. If the controlling aspect was more salient, intrinsic motivation would decrease; conversely, if the informative aspect of competency was more salient, intrinsic motivation would increase.

Consider this. In the 1980's, when this study was composed, athletic scholarships for Division I football teams was common. However, it was rare for wrestlers and female athletes to receive scholarships. Thus, the normality of a scholarship for Division I football players, would have decreased the saliency of the informative properties of the reward; however, the rarity of a scholarship for wrestlers and female athletes, would highlight the informative message of competency.

This hypothesis was supported in a more recent study on athletic scholarships (Amorose, Horne, & Miller, 1994). 440 male and female athletes in Division I sports were analyzed. Results found that players on scholarship had lower intrinsic motivation, enjoyment, and perceived choice than non-scholarship athletes. CET would predict that the increased number of scholarships offered to female athletes today, decreased the saliency of the informative aspect of scholarships for them, resulting in a decrease in intrinsic motivation, similar to male football players.

Now, as the reader recalls, according to CET, it is the perception of the reward that causes an athlete to increase or decrease in intrinsic motivation. In this context, if a coach uses scholarships as leverage over their athletes—i.e. threatening that they will lose their scholarships if they don't perform well—then this would emphasize the controlling aspect of the reward, decreasing intrinsic motivation. Therefore, coaches should be extremely careful of how they treat the scholarships. Coaches should emphasize the informational aspect, and downplay the controlling aspect, instead of using scholarships as leverage over their athletes.

In this context, Amorose and Horn (2000) teamed up again to see if it was the reward or coaching behaviors that decreased intrinsic motivation. What they found is that the coaches' behaviors were more influential on intrinsic motivation. For example, if a coach was perceived as a tyrant over practice, players had lower intrinsic motivation; whereas, coaches who were perceived as positive, and democratic, increased intrinsic motivation. Therefore, this study suggests that the coach has a bigger impact on intrinsic motivation than the scholarship itself.

Meta-Analyses

A meta-analysis is a statistical practice of combining the results of a number of studies. Considering that literally hundreds of studies have been done on the effects of external rewards on intrinsic motivation over the past 30 years, a summary of the data through a meta-analysis would be of immense help to our research.

Thankfully, a number of scientists have done just this.

Rummel and Feinberg (1988) examined 45 studies between 1971 and 1985. They found that extrinsic rewards significantly decreased intrinsic motivation. However, there were some flaws in this meta-analysis. For example, they did not distinguish between various rewards (i.e. expected vs. unexpected; contingent vs. non-contingent, etc.).

Wiersma (1992) performed another meta-analysis on 20 published studies between 1971 and 1990. Results also found that rewards significantly decreased intrinsic motivation. However, there were also flaws in this. First, the sample size of studies was small; second, as with the former meta-analysis, they did not distinguish between rewards; and third, many of the studies did not have control groups, and instead only compared reward conditions to each other.

Following this, Tang and Hall (1995) performed another meta-analysis, which was much more comprehensive than its predecessors. They examined 50 studies, and distinguished between rewards. They found that task-contingent rewards decreased intrinsic motivation the most, followed by performance contingent rewards; however, unexpected rewards did not effect intrinsic motivation. They also found that verbal rewards increased intrinsic motivation. Further, they found that rewards may enhance intrinsic motivation for boring tasks. All of these findings supported CET. Flaws in the experiment were that some of the measures were not purely of intrinsic motivation. This is because they included results about the quality, quantity, and ratings of how much participants enjoyed activities during the reward phase. Again, this would be a measure of both intrinsic and extrinsic motivation. In order to assess intrinsic motivation, you would need to test participants during another trial, when rewards were not administered.

The importance of this distinction is highlighted by the previously mentioned meta-analysis by Wiersma (1992). Wiersma sought to clear up the supposed contradictory studies on the effects of rewards on intrinsic motivation. It was hypothesized that the conflicts seen could be attributed to differences in experimental designs. They found that while the reward is being administered, intrinsic motivation does not decrease (though intrinsic motivation is difficult to measure in this situation; this will be discussed momentarily); however, when the reward is removed, intrinsic motivation does decrease.

The problem is this: performance during the administration of the reward is not a pure measure of intrinsic motivation. It is a measure of both intrinsic motivation and the reward. When the reward is administered, it would be predicted that if performance increases, the extrinsic reward was stronger than intrinsic motivation; if performance decreases, the extrinsic reward was weaker than intrinsic motivation; and if performance remains the same, the extrinsic reward was equal to intrinsic motivation. Therefore, a "free time" trial must be performed, in which the reward is removed to accurately assess intrinsic motivation.

In summary, though these three meta-analyses had several methodological shortcomings, they all supported CET.

So far, evidence strongly supports CET. But what would a scientific discussion be without a little controversy? Don't fret; this was supplied in a mighty way through Cameron and Colleagues from the behaviorist camp.

Cameron and Pierce (1994) performed a meta-analysis on the effect of rewards on intrinsic motivation. Two years later, Cameron and Eisenberger performed an almost identical analysis, with a few slightly modifications. I will therefore refer to these studies as Cameron, Eisenberger, and Pierce henceforth, unless stated otherwise. Their results were almost entirely contradictory to every shred of evidence shown in this article. They concluded that rewards essentially do not effect intrinsic motivation, and that there was no reason not to use rewards to regulate behaviors, particularly in educational settings. And here is their boldest statement of all: they suggested the "abandoning of cognitive evaluation theory"!

Since this meta-analysis was published, several scientists have harshly critiqued the methods and conclusions made by Cameron, Eisenberger, and Pierce. In 1996, three commentaries (Kohn, 1996; Lepper, Keavney, & Drake, 1996; Ryan & Deci, 1996) argued that Cameron, Eisenberger, and Pierce's meta-analysis was invalid and that its conclusions false. More recently, the inventors of CET themselves stepped in and critiqued this meta-analysis.

Deci, Koestner, and Ryan (1999) reported several flaws in this analysis. Some notable comments were that this analysis combined the effects of boring tasks, with intrinsically interesting task. As has been clearly displayed, CET makes no predictions on boring tasks; only inherently interesting tasks. For, how would extrinsic rewards undermine intrinsic motivation for tasks which have none, or very little intrinsic motivation to begin with? Further, as show in the Tang and Hall (1995) meta-analysis, rewards may actually be of benefit for boring activities. Therefore, this is comparing apples and oranges, and would greatly skew the results. Another problem was that they mixed some rewards together, and misclassified them. For example, they included a reward from a study as a non-contingent reward, that actually was administrated as an engagement contingent reward. They also eliminated 20% of the studies as outliers, instead of isolating the cause of variability. Other critiques were made, but clearly there were many flaws in this analysis.

A flaw in all these meta-analyses is that they did not include unpublished doctoral theses. Doctoral theses are commonly the most comprehensive papers conducted; thus, inclusion of these papers would increase the reliability of the analysis.

In light of the various flaws in these meta-analyses, Deci, Koestner, and Ryan (1999) teamed up to compose the most comprehensive meta-analysis on rewards to date. 128 studies were examined. Participants ranged from college to pre-school students. There were a wide array of rewards administrated, including marshmallows and dollar bills.

Results found that verbal rewards, when not administered in a controlling manner, increased intrinsic motivation. However, when they were administered in a controlling manner, they decreased intrinsic motivation.

Both engagement and completion contingent rewards decreased intrinsic motivation. Performance contingent rewards also decreased intrinsic motivation; but not as much as the previous two rewards. However, participants in the performance contingent condition, who got less than the maximum reward, showed a sharp decline in intrinsic motivation—more so than any other group! This is because not only are they being controlled by the reward, but they are being delivered information that they are incompetent. Since in many cases, the majority do not achieve the standard of excellence taken to obtain a performance contingent reward, these can be especially dangerous to administer. Results also found a significant difference between the effects of rewards on boring and intrinsically motivating tasks. This is in agreement with the findings of Tang and Hall (1995).

Unexpected rewards and non-contingent rewards did not decrease intrinsic motivation; presumably because the participants were not doing the task in order to get those rewards, therefore, they did not feel controlled by them.

It has also been suggested that the effects of rewards on intrinsic motivation may be transitory. But their results indicated they were long lasting.

One interesting finding was that rewards were more undermining to intrinsic motivation for kids than college students. The authors suggested 3 explanations: 1.) Kids are “bribed” more often than adults for performing activities, so it may have a deeper effect. 2.) College students are more cognitively advanced, so they may be able to distinguish the controlling aspect from the informational aspect of rewards better than kids. 3.) College students may have different expectations during experiments, because they have more experience in them than kids.

The authors suggested that verbal rewards are effective, in part because they are unexpected rewards. In this context, if a coach always praises their athletes for performing an activity, the athletes may come to expect praise, and CET would predict that intrinsic motivation would decrease. In fact, they sourced 3 studies which indicated that when participants were told they would be given performance feedback, and then were given positive feedback (verbal rewards) after completion of the task, intrinsic motivation significantly decreased! So evidence suggests that you should give verbal rewards in an intermittent fashion. This is further supported by studies on partial reinforcement (refer to [Hull's Quantitative Equation on Human Performance](#)).

In response to this meta-analysis, Cameron, Eisenberger, and Pierce (1999) teamed up again to make 2 more meta-analyses. But it was more or less the same. Deci, Koestner, and Ryan (1999, b) again responded with a convincing argument refuting the claims made by them. The largest point that Cameron, Eisenberger, and Pierce (1999) tried to get across was that performance-contingent rewards may enhance intrinsic motivation. This was supported by a recent study by Cameron, Pierce, Banko, Katherine, and Sylvia (2003) who found that giving rewards that are tied to meeting increasingly demanding performance standards enhanced intrinsic motivation. However, Deci, Koestner, and Ryan (1999, b) pointed out several flaws in this meta-analysis. The primary differences were that they excluded 11 studies out of 40 which indicated negative results, and had several other methodological flaws, which had actually been pointed out in previous critiques, but were not corrected.

In summary, the results appear to strongly support CET, and suggest that we should be very careful about how and if we use external rewards.

The Link Between Self Determination Theory, CET, & Goal Orientations

In another article in this issue of JHR, the current author addressed various goals. It is a pre-requisite to study that article to be able to understand the topic that is about to be discussed. Click [Here](#), to study this article.

It has been suggested by several authors that there may be a link between self determination theory and goal orientations (Nikos, 2001). Evidence suggests that an ego (outcome) orientation can undermine intrinsic motivation; whereas, a mastery goal orientation facilitates intrinsic motivation (Ryan, 1982; Brunel, 1999). This is because athletes with an ego orientation are concerned more with the outcome of an event, rather than the activity itself (Nicholls, 1989). For instance, Brunel (1999) found that an ego orientation increased introjected regulation (participating in an activity because of various pressures) and external regulation (participating in an activity for a reward) in 160 badminton athletes. Similarly, Ryan (1982) found that an ego orientation decreased intrinsic motivation for participating in a puzzle game.

Conversely, a mastery orientation appears to enhance intrinsic motivation. This is because a mastery orientation focuses on intrinsic properties of the activity, rather than an external motivator. In this context, Butler (1987) found that a mastery goal orientation enhanced intrinsic motivation, by promoting task persistence and challenge seeking activities.

Various studies have supported this hypothesis. Duda, Chi, Newton, Walling, and Catley (1995) found that a mastery goal orientation enhanced intrinsic motivation, while an ego goal orientation maintained or decreased intrinsic motivation. Studies on British and Romanian PE have found that students with the highest intrinsic motivation were those with a high mastery orientation, regardless of their ego orientation.

And a plethora of other studies have demonstrated this (refer to the aforementioned goal setting article for more).

In order to summarize this data, Nikos (2001) performed a comprehensive analysis on the link between Self Determination Theory and Goal orientations. Over 247 British University students were examined. Results indicated that a mastery orientation was able to predict all three types of intrinsic motivation and identified regulation (as you recall, this is an autonomous form of extrinsic motivation, and related to enhanced self determination). However, a mastery orientation did not predict introjected regulation (i.e. avoidance or participation in activities because of guilt, pressure, etc.), external regulation (participation in activities purely for rewards), or amotivation (a lack of motivation).

As expected, an ego orientation was able to predict introjected and external regulation. This is most likely because athletes with an ego oriented mentality participate in sport for extrinsic rewards such as acknowledgment, superiority, etc. (Nichols, 1989). Additionally, an ego orientation was not a predictor of intrinsic motivation, or other self determined measures (except, it did predict intrinsic

motivation for sensations). This is attributed to the controlling nature of their extrinsic goals. Lastly, ego orientations did not predict amotivation.

Nikos also examined the interaction between goal orientations, as individuals can be both mastery and ego oriented. Results found that when participants master orientation was high, external regulation was lower when ego orientation was lower. Further, high mastery oriented individuals predicted high intrinsic motivation regardless of ego orientation.

Thus, evidence suggests that a mastery goal orientation is optimal for facilitating intrinsic motivation, while an ego orientation will tend to enhance extrinsic motivation. These results are clearly explained using Self Determination Theory.

Now, an outcome oriented mentality often promotes competition (for information on competition vs. cooperation Click [Here](#)). And CET would predict that competitive mentalities can lead to a decrease in intrinsic motivation, as they focus on external goals such as winning. In this context, Fortier, Vallerand, Briere & Provencher (1995) tested CET with competitive athletes compared to recreational athletes. Results indicated that recreational athletes had greater intrinsic motivation, while competitive athletes had greater identified regulation and amotivation. Similarly, Kavussanu and Roberts (1996) found that a competitive, outcome oriented environment decreased the intrinsic motivation of tennis players.

The next question is, what is the effect of rewards on competitive situations. These type of rewards are called competitively contingent rewards, and are a sub category of performance contingent rewards. They involve rewarding individuals for defeating others. In this context, Pritchard, Campbell and Campbell (1977) found that giving participants a \$5 reward for defeating participants in their group (approximately 6 participants per group) decreased intrinsic motivation relative to no reward. CET predicts these types of rewards are very controlling, as they focus the participants locus of causality on winning, which is an external motivator. Other studies have also supported these findings (Ryan, Mims, & Koestner, 1983).

Thus, Self Determination Theory and CET are very helpful in explaining the results of goal orientations and competition on intrinsic motivation.

Conclusion

The results clearly indicate that the rewards can greatly undermine intrinsic motivation. For practical applications, click [Here](#).

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