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Undermining Intrinsic Motivation

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ABSTRACT

This paper will examine the possible effects of extrinsic rewards on intrinsic motivation in Preschool to College students and argue that extrinsic rewards undermine intrinsic motivation. The *Overjustification* hypothesis by self-perception theory, as well as the cognitive evaluation theory (CET) will be discussed, including some of the benefits of self-motivation for learning. Various studies will be explored to show that extrinsic rewards reduce intrinsic motivation. Results suggest that students that are offered an extrinsic goal subsequently show less intrinsic interest and demonstrate poorer conceptual learning and performance in the long term. Alternately, students that are regulated by intrinsic motivations experience positive consequences at school. This paper will conclude on the note that intrinsic motivation plays a pivotal role in learning, and that teachers and other social agents can help promote intrinsic goals to motivate conceptual learning and performance, even when students hold a stronger extrinsic goal orientation. Finally, various factors that can enhance and develop intrinsic motivation will be discussed, and suggestions will be provided for further research on this topic.

There is a great deal of research that investigates the effects of extrinsic rewards on intrinsic motivation; in fact, existing literature indicates that reinforcement can undermine intrinsic motivation, lowering intrinsic interest in students (Deci, Koestner, Ryan, 2001). What exactly is meant by reinforcement for student learning? There are three main types of reinforcers: activity reinforcers, such as allowing a student to participate in a pleasant activity; social reinforcers, such as praise and smiling; and tangible reinforcers, such as students being awarded with stickers or gold stars, in return for obedience or for meeting an established standard (Duncan, Kemple, Smith, 2000). These methods are used to provide an incentive to control students' behaviour and ensure they perform at a certain level at school. These methods are part of extrinsic motivation, as opposed to intrinsic motivation. Intrinsic motivation is defined as "motivation in which the task is enjoyable or satisfying in itself; while extrinsic motivation is motivation induced by rewards or punishments dependent upon success or failure in the task" (Lin, McKeachie & Kim, 2003, p. 252). Reinforcement, in the form of external rewards, should not be used in an educational setting, as it undermines intrinsic motivation in students of varying ages, from preschool to college.

Intrinsic interest, such as the internal enjoyment one receives partaking in a task, plays a pivotal role in learning, as intrinsic motives are positively related to academic achievement (Guay, Ratelle, Chanal, 2008). Extrinsic and intrinsic motivation affects learning on several levels. Not only do extrinsic rewards undermine intrinsic motivation, but in some cases, they also demonstrate poorer conceptual learning and performance in students. Students who are motivated intrinsically are more internally motivated, which leads to higher academic achievement and a more positive experience at school (Guay, Ratelle, Chanal, 2008). Overall, rewards do not encourage internal motivation, nor do they facilitate learning.

Research maintains that tangible rewards, such as stickers, toys and gold stars, truly have a substantial undermining effect on internal motivation (Deci, Koestner & Ryan, 2001). A field experiment conducted by Greene, Lepper & Nisbett (1973) examined the Overjustification hypothesis by the self-perception theory, which suggests that a student's intrinsic motivation in a learning task may very well be reduced when encouraging a student to

participate in that task for some type of extrinsic goal. Thus, “the Overjustification hypothesis is formulated in terms of the perception of oneself as having undertaken an activity in order to obtain some extrinsic goal” (Greene, Lepper, Nisbett, 1973, p. 130). It is noted in Deci’s study (1971) that a student being rewarded with tangible rewards for participating in a task that is intrinsically interesting would evidently reduce their subsequent internal motivation in that task if external rewards are not present.

Deci’s study (1971) involved asking 24 college student participants to work through several puzzles in the span of three experimental sessions, in order to investigate the effects of external rewards on intrinsic motivation to perform an activity. Twelve of the subjects were in the control group and 12 were in the experimental group. One group of participants were given a tangible reward (they were paid for solving the second set of puzzles), while the other group was not given any reward. In the final experimental session, neither of the participant groups were paid (Deci, 1971). Deci examined the participants’ behaviour behind a one-way mirror during a break that followed each session, in which participants were left to do whatever they desired during that time, which included participants resuming with the puzzles if they wished. Results suggest that participants that had been paid during the second experimental session demonstrated a substantial decrease in intrinsic interest from the first experimental session to the last experimental session than participants that were not given the monetary reward (Deci, 1971). To test the hypothesis, the time spent on solving the puzzle during free time was used from the three sessions. The hypothesis predicts that motivation will drop after the reward is removed (Deci, 1971). Since the reward was given in the second session, it was predicted that motivation would decrease in the third session. The statistic used for testing the hypothesis is: (Experimental “E” Time 3 motivation – Time 1 motivation) minus the Control “C” (Time 3 motivation – Time 1 motivation). The value of the statistic $E (T3 - T1) - C (T3 - T1)$ is 77.6 seconds, which indicates that the combined difference (Experimental + Control) of Time 3 – Time 1 is – 77.6. This means that in Time 3 (after the reward was given), intrinsic motivation dropped to levels below Time 1 and Time 2. In the study,

this illustrates that after given an extrinsic reward, intrinsic motivation levels dropped significantly.

Practices in the education system can be considered contractual (Greene, Lepper & Nisbett, 1973). A student may finish an activity in order to gain some type of tangible reward, such as stickers, grades, or other rewards. Greene & Lepper (1973) conducted an experiment in an educational setting with preschool children, as a means to test the Overjustification hypothesis in a naturalistic setting, which refers to observing students in a natural setting. The researchers maintain that if an Overjustification effect is present in the classroom, educators should pay greater attention to the possible long term costs of such extrinsic incentive programs, such as lower subsequent intrinsic motivation in learning tasks (Greene, Lepper & Nisbett, 1973). The preschool children (24 boys and 45 girls), who were principally white from middle-class backgrounds, ranged in age from 40-64 months at Bing Nursery School, which is located on the Stanford University campus. The participants were assigned randomly in either the expected-award condition, the unexpected-award condition, or the no-award condition. In the expected-award condition, the subjects agreed to participate in the drawing activity because they would eventually obtain an extrinsic reward: a fancy certificate. In the unexpected-award condition, subjects were given a reward, but had no idea of the reward until they completed the activity. Finally, in the no-reward condition, subjects did not expect a reward, nor did they receive a reward. Ultimately, measures were taken in order to obtain subsequent intrinsic interest. Observations to detect intrinsic motivation were done covertly behind a one-way mirror. The results suggest that an Overjustification effect is completely probably (Greene, Lepper & Nisbett, 1973). As predicted, in the expected-award condition, the preschool children showed quite a reduction in intrinsic interest and motivation in the activity after having completed it, in order to acquire the reward (Greene, Lepper & Nisbett, 1973). The mean percentage of subjects that showed continued intrinsic interest was 8.59% for the expected award group, while it was 16.73% for the no award group, which indicates that more subjects were intrinsically motivated when no reward was given (Greene, Lepper & Nisbett, 1973). This further illustrates that extrinsic rewards, therefore, reduce intrinsic motivation.

A meta-analysis by Deci, Koestner & Ryan (2001) suggest that rewards are quite questionable and have brought forth much controversy in the education system. In fact, psychological research has revealed the negative effects of tangible rewards on students' internal motivation to learn. Such research indicates that such rewards can undermine internalization and thus, do not encourage self-motivation and interest in tasks (Deci, Koestner & Ryan, 2001). It is common knowledge that educators around the world may use rewards with their students in order to attain and accomplish a particular task. However, careful investigation of such incentive programs needs to be considered. Students who are motivated intrinsically are driven by an internal motivation, which leads to improved academic performance and an overall more positive experience in school (Guay, Ratelle, Chanal, 2008).

The Cognitive Evaluation Theory (CET) stipulates that underlying intrinsic motivation is part of an individual's "innate psychological needs for competence and self-determination" (Deci, Koestner & Ryan, 2001, pg. 3). As maintained by the theory, the effects of external rewards on intrinsic motivation shows how events may influence an individual's perception on self-determination and competence. If particular events are seen to decrease a person's self-determination and competence, this will evidently undermine intrinsic motivation. On the other hand, if events increase self-determination and perceived competence, then intrinsic motivation will be enhanced (Deci, Koestner & Ryan, 2001). Some rewards are seen to have a controlling nature, in that they can regulate and manage students' behaviour, but in the end, undermine intrinsic motivation (Deci, Koestner & Ryan, 2001). For example, a classroom teacher may give a sticker to a child each time the child completes work on time. Verbal rewards can also have a considerable controllable nature, which in turn, encourages individual's to participate in behaviours particularly to acquire praise (Deci, Koestner & Ryan, 2001). Moreover, CET also maintains that tangible rewards are often used in order to get people to take part in behaviour or a task that they might not have engaged in if not offered the reward. In this case, tangible rewards are also considered to have a controlling nature (low perception of self-determination) and therefore have the capacity to reduce an individual's

intrinsic motivation. The meta-analysis conducted by Deci, Koestner & Ryan (2001) maintains that tangible rewards do undermine intrinsic motivation.

The meta-analysis was performed on 128 studies, which included studies on schoolchildren and studies on college students, on the use of extrinsic rewards. The studies of expected tangible rewards were divided in four groups: task non-contingent (rewards that did not require working on a task), engagement-contingent (rewards that required working on a task), completion-contingent (rewards that entailed completing a task), and performance-contingent (rewards contingent in regards to a specific level of performance at a task) (Deci, Koestner & Ryan, 2001). The researchers discuss that tangible rewards, such as prizes and other physical rewards, decrease intrinsic motivation, as tangible rewards are often used to influence students to do certain things that they would not normally do, thus, the tangible rewards are used to control behaviour (Deci, Koestner & Ryan, 2001). In addition, providing tangible rewards based on student performance to individuals that are already engaged in a given task, decreases the probability that the individual will perform the rewarded task when a tangible reward is not provided.

In conducting the meta-analysis, Cohen's d was used as a measure of effect size. The mean of the control group was deducted from the mean of the rewards group, so that a negative d reflects an undermining effect (Deci, Koestner & Ryan, 2001). Standard deviations, means, and sample sizes from the various studies were used to determine the d value; the results for the effects of expected tangible rewards showed a d value of -0.36 (Deci, Koestner & Ryan, 2001). Additionally, the results of the effects of all rewards showed a d value of -0.24; hence, these results stipulate that there is an undermining effect.

It is found that intrinsic motivation is significantly affected in subsequent tasks when students are working towards an external goal (Guay, Ratelle & Chanal, 2008). There is much evidence to justify the importance of internal motivation, so why do some educators continue to place emphasis on extrinsic motivation? After all, external rewards do not contribute to a life-long success of intrinsic motivation in individuals (Guay, Ratelle & Chanal, 2008). The Self-Determination Theory (SDT) stipulates that student

motivation is optimal when it is based on intrinsic goals and not when it is based on extrinsic goals (Guay, Ratelle & Chanal, 2008). In addition, Guay, Ratelle and Chanal (2008) point to studies that indicate that students with higher intrinsic motivation convey more positive outcomes, such as more enjoyment in their academic work, higher grades, greater positive emotions in school, and overall pleasure in the classroom. The researchers also maintain that there is a positive association between intrinsic motivation and subjective well-being. This, in turn, causes students to experience positive consequences at school (Guay, Ratelle & Chanal, 2008). Overall, “its arena is the investigation of people’s inherent growth tendencies and innate psychological needs” (Ryan & Deci, 2000, p. 68) that are central to self-motivation and positive practices. In other words, if an individual feels good internally, then internal motivation would be more possible.

Self-motivation plays a significant role in the facilitation of intrinsic motivation. Although many teachers use extrinsic rewards in the classroom, students who are intrinsically motivated experience positive consequences at school. Ryan & Deci (2000) suggest that individuals who possess self-motivation hold more interest and excitement, compared to those who are purely controlled externally. This increased intrinsic interest is noted to enhance persistence, performance, and creativity in a task, as well as general well-being (Deci & Ryan, 1991). Research also suggests that there are several other factors that diminish students’ intrinsic motivation, such as deadlines, threats and forced goals (Ryan & Deci, 2000) so it is important to acknowledge opportunities that would enhance intrinsic motivation. Such opportunities include choice and acknowledgment of feelings, as these factors are found to enhance intrinsic motivation and allow individuals with a much better feeling of autonomy (Ryan & Deci, 2000). In fact, field studies have shown that students that are instructed with a more controlling nature not only lose intrinsic interest, but also learn less effectively (Ryan & Deci, 2000). Consequently, teachers who are more autonomy supportive (supporting intrinsic values) instil in their students greater intrinsic motivation and curiosity (Ryan & Deci, 2000). It is clear that one’s social environment can help to encourage and facilitate intrinsic motivation by supporting a student’s innate psychological needs. In fact, Guay, Ratelle and

Chanal (2008) suggest that parents who support the value of intrinsic motivation offer their children opportunities to make choices. By parents simply being involved in their children's education, this communicates to children that education has value and that school is an important part of life. It is found that parent and teachers who are autonomy supportive appreciate their children's viewpoints and give them the opportunities to exercise choice, as well as offer them noteworthy underlying principles for why they have to complete less interesting activities (Guay, Ratelle & Chanal, 2008). This, in turn, helps children acquire intrinsic motivation at school.

Although there is substantial research on the negative effects of extrinsic rewards on intrinsic motivation, there are also studies that indicate that external reward programs do not have a detrimental effect on students' intrinsic interest. For example, a meta-analysis by Cameron & Pierce (1994) maintains that the undermining effect that extrinsic rewards has on intrinsic motivation is quite minimal and principally insignificant for educational policy. However, more recent literature (Deci, Koestner & Ryan, 1999) suggests that Cameron and Pierce's meta-analysis is flawed and that its conclusions are invalid. As part of their meta-analysis, approximately 20% of the effects of external rewards were discarded from their analysis, which clearly shows that their conclusions are inaccurate. Deci, Koestner & Ryan (1999) executed a new meta-analysis, which included 128 experiments that showed that tangible rewards significantly undermine intrinsic motivation.

Some research maintains that motivation does not have a negative effect if it is used at a moderate level, as a moderate level of extrinsic motivation is beneficial to people, as long as levels of intrinsic motivation are higher (Lin, McKeachie & Kim, 2003). Reliable and accurate measures need to be established in order to accurately assess an individual's level of moderation. Overall, although there is some research that argues that extrinsic motivation does not necessarily have an effect on intrinsic motivation, much of this research is methodologically flawed and requires further attention.

Generally, I find that teachers use rewards in their classrooms because they find success in using such rewards. These rewards evidently generate a standard. Some argue that if a student is given a reward for participating in a project, the student is most likely to do the task. This is a way for classroom

teachers to persuade students to accomplish a certain task. However, students are then persuaded to perform a task solely to achieve the reward in the end, which does not internally motivate students in the long term. I imagine that an environment where extrinsic rewards are used, may lead students to take fewer risks and be less creative, and just lead students to obtain the right answer only. Thus, not only can this affect an individual's intrinsic motivation, but it might channel students to not take risks and encourage students to just follow a narrow path that they know is a safe zone. Do we want a society of autonomous robots or a society where people are able to think outside of the box, take risks, and give creative solutions?

Overall, there is much evidence that confirms that extrinsic rewards have a negative effect on intrinsic motivation, by undermining intrinsic motivation and lowering intrinsic interest in students, from preschool to college. Intrinsic motivation plays a pivotal role in learning, and teachers and other social agents can help promote intrinsic goals to motivate conceptual learning and performance. Further research in the area of extrinsic rewards on intrinsic motivation needs to be explored, such as examining more diverse population groups and different culture groups. Most of the literature examined has conducted experiments using a white middle class population. Further research, using different cultural groups, would help to assess if there are cultural differences in this subject area. This may lead to a more precise analysis of the effects external rewards have on internal motivation, in order to avoid making generalizations.

Works Cited

- Cameron, J., & Pierce, W. D. Reinforcement, reward, and intrinsic motivation: A meta-analysis. *Review of Educational Research*, 64, 1994, p 363-423.
- Chanal, J., Guay, F., & Ratelle, C.F. Optimal learning in optimal contexts : The role of self-determination in education. *Canadian Psychology*, 49(3), 2008, p 233-240
- Deci, E. L. Effects of externally mediated rewards on intrinsic motivation. *Journal of Personality and Social Psychology*, 18, 1971, p 105-115.
- Deci, E. L., & Ryan, R. M. A motivational approach to self: Integration in personality. *Nebraska symposium on motivation, Perspectives on Motivation*, 38, 1991, p 237-288.
- Deci, E. L., Koestner, R., & Ryan, R. M. A meta-analytic review of experiments examining the effects of extrinsic rewards on intrinsic motivation. *Psychological Bulletin*, 125, 1999, p 627-668.

- Deci, E.L., Koestner, R., & Ryan, R.M. Extrinsic rewards and intrinsic motivation in education: Reconsidered once again. *Review of Educational Research*, 71(1), 2001, p 1-27.
- Duncan, T.K., Kemple, K.M. and Smith, TN.. Reinforcement in developmentally appropriate early childhood classrooms. *Childhood Education*, 2000.
- Greene, D., Lepper, M.R., & Nisbett RE. Undermining children's intrinsic interest with extrinsic reward: A test of the Overjustification hypothesis. *Journal of Personality and Social Psychology*, 28(1), 1973, p 129-137.
- Lin, Y-G, McKeachie, NU., Kim, Y-C. College student intrinsic and/or extrinsic motivation and learning. *Learning and Individual Differences*, 13, 2003, p 251-258.
- Ryan, R.M., & Deci, E.L. Self-determination theory and the facilitation of intrinsic motivation, social development, and well-being. *American Psychologist*, 55(1), 2000, p 68-78.