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The Psychology of Motivation

The late Jere Brophy, a long-time Michigan State University professor of educational psychology, started the second edition of his 428-page tome titled *Motivating Students to Learn* with the following summaries of two opposing views about how best to motivate students:

Learning is fun and exciting, at least when the curriculum is well matched to students' interests and abilities and the teacher emphasizes hands-on activities. When you teach the right things the right way, motivation takes care of itself. If students aren't enjoying learning, something is wrong with your curriculum and instruction – you have somehow turned an inherently enjoyable activity into drudgery.

School is inherently boring and frustrating. We require students to come, then try to teach them stuff that they don't see a need for and don't find meaningful. There is little support for academic achievement in the peer culture, and frequently in the home as well. A few students may be enthusiastic about learning, but most of them require the grading system and the carrots and sticks that we connect to it to pressure them to do at least enough to get by.¹

Brophy observed that “neither [view] is valid, but each contains elements of truth.” They illustrate the two extreme ends of a continuum of views among psychologists of student motivation. At one extreme is a

teaching philosophy based on what Brophy called “overly romantic views of human nature,” while at the other is a philosophy based on “overly cynical or hedonistic views of human nature.” Between these extremes lies a realistic and research-supported theory of student motivation.

Our core message is that too many teachers adhere to the first view and reject the use of rewards that have been proven to be effective in classrooms in carefully controlled studies covering many years and many thousands of students. Critics of the use of rewards in education often rely on misrepresentations of the alternative point of view, often depicting mere caricatures of how psychologists and economists actually view human motivation and the role of rewards in human action.

To be clear, the well-designed reward systems we describe do not include the unearned praise and uncritical recognition associated with the self-esteem fad that swept the U.S. in recent years. Some writers observe that Millennials (persons born from the early 1980s to the 2000s, also called Generation Y) grew up believing that simply participating in a sport or “trying hard” at some other activity entitled them to rewards regardless of their level of performance. As a result, they enter the workforce with unrealistic expectations of recognition, promotions, and pay increases.² Greater use of well-designed reward systems would have better prepared this generation for the challenges and responsibilities of adult life.

Rewards need not be crude “carrots and sticks” but can take the form of feedback and encouragement that make learning a *rewarding* experience long before the acquisition of a particular piece of knowledge or skill might earn material rewards. Learning without rewards, we show, is usually more difficult than learning with rewards. For this reason, the tendency among educators to discourage the use of rewards hurts rather than helps students.

What about the feared negative effects of relying too heavily on rewards? Judy Cameron and David Pierce of the University of Alberta said it best when they wrote: “Rewards can have negative effects, but such effects are circumscribed, limited, and easily prevented. A careful arrangement of rewards in educational settings and the work environment can enhance employees’ interest and performance. This occurs when rewards are closely tied to the attainment of performance standards.”³ This conclusion, we show, applies not just to employees but also to students.

Extrinsic versus Intrinsic Motivation

USA Weekend, an insert that appears inside millions of American

newspapers each weekend, had a cover story in 2013 titled “What Teachers Want You to Know” written by Eric Sheninger, the “award-winning principal” of New Milford High School in New Jersey. At the very end of the article, Sheninger approvingly quotes a teacher giving this advice: “Avoid using rewards and punishments for academic work. If you give your child a dollar for every book he reads, it’s less likely he will want to read books for pleasure after you stop paying him.”⁴ Sheninger and this teacher illustrate the widespread fear among teachers that rewards might extinguish internal motivation.

Psychologists have long distinguished between behavior in response to rewards or “reinforcements,”⁵ called *extrinsic* motivation, and behavior arising from internal or *intrinsic* motivation. The possibility that poorly designed reward-and-punishment systems can discourage desirable behavior (as judged by an outside observer) has been long recognized, but experts in the field did not believe this phenomenon was particularly widespread. Most psychologists believed systems involving rewards to influence conduct generally achieved their objectives.

Misleading Research

In 1985, Edward Deci and Richard M. Ryan at the University of Rochester challenged the prevailing wisdom by claiming experimental data showed many reward systems failed to achieve their stated goals.⁶ In later works, they maintained that people have three innate psychological needs – competence, autonomy, and relatedness – the fulfillment of which yields enhanced self-motivation and mental health.⁷ They argued that compared to extrinsic or “controlled” motivation, intrinsic or “autonomous” motivation more consistently meets these needs, so reliance on intrinsic motivation “predicts persistence and adherence and is advantageous for effective performance, especially on complex or heuristic tasks that involve deep information processing or creativity.”⁸ Deci and Ryan cited more than 100 studies that seemed to confirm their views.

Daniel Pink, a writer who popularized Deci and Ryan’s conclusions, described the implications as follows: “In other words, rewards can perform a weird sort of behavioral alchemy. They can transform an interesting task into a drudge. They can turn play into work. And by diminishing intrinsic motivation, they can send performance, creativity, and even upstanding behavior toppling like dominoes.”⁹

In a popular book titled *The Manufactured Crisis*, David Berliner and

Bruce Biddle, both psychologists, relied on Deci and Ryan's research to support their harsh criticism of "programs that use carrots and sticks for motivating students or teachers."¹⁰ "A good deal of evidence now confirms the poor effects of such strategies," they wrote.¹¹ "Since extrinsic sanctions tend to destroy intrinsic motivation, accountability programs can depress the morale of teachers and administrators."¹² "Perhaps the surest way to RUIN American education," they concluded, "would be to expand the use of carrots and sticks with students and teachers."¹³

The implications of Deci and Ryan's work for education were developed at length by Alfie Kohn, a former teacher and now a popular writer and frequent guest on television and radio shows.¹⁴ According to Kohn, "we are beings who possess natural curiosity about ourselves and our environment, who search for and overcome challenges, who try to master skills and attain competence, and who seek to reach new levels of complexity in what we learn and do." "Incentives simply do not work," Kohn wrote in 1993, and "any approach that offers a reward will fail." The evidence that rewards cause people to do a poorer job on many tasks, according to Kohn, is simply "irrefutable."¹⁵

Professional educators have many reasons to embrace Kohn's extreme views. Many are persuaded by the extensive research Kohn cites in his books, much of it drawn from Deci and Ryan's work. The underlying philosophy fits a romantic philosophy of human nature popularized by philosophers as far back as Jean-Jacques Rousseau and more recently by Jean Piaget, Benjamin Spock, and William Glasser. Some teachers are simply shamed into embracing the new theory since Kohn and others write that relying on rewards is evidence of laziness or worse.¹⁶

Definitive Research

Less well known and less welcomed by educators is the mounting body of evidence that Deci, Ryan, and their advocates misunderstand or misrepresent the research they cite to support their conclusions.¹⁷ The strongest critical response to their work came from Judy Cameron and David Pierce, professors of educational psychology and sociology, respectively, at the University of Alberta. In their own meta-analysis of 96 experimental studies, published in 1994, they concluded, "overall, reward does not decrease intrinsic motivation."¹⁸

In 1999, Cameron and Pierce along with Robert Eisenberger, a professor of psychology at the University of Delaware, conducted another

meta-analysis, this time of rigorous experimental studies. They concluded:

Our meta-analysis found that reward increased perceived autonomy; that reward ameliorated the effects of failure on intrinsic motivation; that reward contingent on meeting an absolute performance standard either increased or did not affect intrinsic motivation, depending on the intrinsic motivation measure used; and that reward contingent on surpassing the performance of others increased intrinsic motivation.¹⁹

Other scholars have pointed out that many of the studies Deci, Ryan, Kohn, and other critics of rewards rely on had small sample sizes or were poorly designed. For example, most of the empirical research involving control groups involves college students (usually psychology majors) who were given an external reward (credit or grade) to participate in the experiment. As Cameron and Pierce note, "This means that both the experimental and control participants were extrinsically motivated to do the target activity before rewards such as money were offered to the experimental group. One interpretation of this is that much of the research on the topic actually concerns offers of extrinsic rewards for behavior that is already extrinsically motivated rather than the effects of extrinsic rewards on intrinsically motivated behavior."²⁰

Many of the studies cited by Deci and Ryan were limited to immediate and temporary states of mind that may not be reflected in performance. The chief purpose of child rearing and schooling is not to make children and adolescents happy but to impart knowledge, skills, and behaviors so they can make informed and wise choices throughout their lives. Long-term control-group studies, rather than quick studies of college students taking psychology courses, ought to form the basis of the debate over the use of rewards in education. Early childhood rewards can yield immediate effects as well as positive effects later in life such as higher test scores in later grades, regular advancement, and greater likelihood of graduating from high school.²¹

Finally, the reward systems being studied run the gamut from unearned verbal praise and trophies for participation to cash rewards for graduating from high school and bonuses and commissions for adult salespeople. The effectiveness of any reward system varies based on its design (for example, how the rewards are explained to participants, when and how they are

given, and whether they are age-appropriate) and other factors. Kohn's sweeping judgment that "incentives simply don't work" can't be supported by a careful review of the literature.

Even if reward skeptics were to prevail, what they advocate would be dysfunctional for occupational life after school completion, which is substantially driven by extrinsic rewards in the form of employment, bonuses, raises, promotions, and work recognition. Professionals and owners of firms are driven by the monetary rewards of serving others well. Of course, both groups also can be driven in part by intrinsic rewards, but such rewards may not be sufficient to ensure continuation of their own and their colleagues' and employees' efforts.

The debate among academics over the effectiveness of rewards resulted in a range of views. Kohn, Deci, and Ryan are now seen as being at one end, claiming rewards undermine intrinsic motivation most of the time. Most other experts say extrinsic motivation can undermine intrinsic motivation sometimes, due to defects in specific reward systems, but this is not inevitable or even the common result when rewards are used. Advocacy of the use of rewards in K–12 education even by behavioral psychologists such as B.F. Skinner was never as adamant and unconditioned as Kohn and other critics of rewards imply.

Representing the psychological literature on rewards as a contest between two extreme views may have been useful and necessary to get educators and employers to view more seriously the design of the reward systems they were using. But modern researchers recognize elements of both intrinsic and extrinsic motivation are likely to be present in most circumstances.²² For this reason, motivation research in recent years makes earlier work by critics of rewards obsolete.²³

Deferring Gratification

One reason rewards are so powerful is because they teach young children to defer gratification. Success in later life depends in part on our ability to wait for greater rewards in the future rather than seize less-valuable immediate rewards. Those who cannot delay gratification tend to react thoughtlessly to temptations rather than try to see further ahead to other possibly larger costs and benefits. Those who can delay gratification tend to respond to opportunities by making wiser choices that maximize long-term benefits.

Numerous studies have compared the characteristics of individuals who

differ in their ability to defer gratification.²⁴ The “Marshmallow Test” is an early example of this research. Walter Mischel and his Stanford colleagues told four- and five-year-olds singly that if they could resist eating a marshmallow on a table in front of them for a little while, they would receive two marshmallows. Only one in three children could wait the full 15 minutes before the experimenter returned. Following up 20 years later in the mid-1980s, Mischel found those who could delay gratification were better at concentrating, reasoning, and resisting stress.²⁵

Delaying gratification is an important ingredient in “grit,” which Angela Duckworth and her colleagues at the University of Pennsylvania define as “perseverance and passion for long-term goals.”²⁶ Duckworth’s research showed grit, rather than IQ or prior test scores, predicted academic success as measured by grade-point averages among Ivy League students, retention in the United States Military Academy at West Point, and rankings in the National Spelling Bee.

Child psychologists view deferring gratification as a part of learning self-control. According to Janet Metcalfe and Walter Mischel, the arts of child rearing and teaching depend on extrinsically inculcating intrinsic self-control in four milestones, the first of which is deferred gratification, as shown in the table below.

Milestones of Intrinsic Self-Control

1. Delay gratification, resisting temptation to act impulsively and considering the value of longer-term goals.
2. Balance the need for adult approval and for independence, gaining self-control while considering other people’s expectations.
3. Understand the value of material goods, determining why more-important things tend to cost more than less-important things.
4. Enjoy solidarity with others, collaborating as members of teams to achieve common goals and rewards.

Source: Janet Metcalfe and Walter Mischel, “A Hot/Cool-System Analysis of Delay of Gratification: Dynamics of Willpower,” *Psychological Review* 106, no. 1 (January 1999): 319.

Reward systems can be designed to help children achieve all four of these milestones. Self-paced learning programs, especially some of the digital learning programs described later, enable children to monitor their own learning and reward achievement without constant adult supervision and intervention. Programs that give students play money or actual cash for good behavior or taking optional tests teach students the value of things they want and how higher-value items typically cost more time or effort. And teamwork can be encouraged when rewards are given to groups for their achievements, as is common in sporting activities, rather than only to individuals.

Curricular activities that require students to act as if they have self-control can instill the behavior and learning habits that make genuine self-control possible.²⁷ In a study of minimizing littering and in two studies focusing on acquiring basic math skills, children more often retained their learning when told they were already doing the activities teachers hoped to inculcate.²⁸ Children who littered were told they are very tidy people who clean up after themselves. Children learning math were told they are able to do the math. Control-group students were merely told they should be doing things the teacher expected. These differences were nearly undetectable to observers but produced significant outcome effects probably attributable to the way students perceive themselves.

Rewards and Learning

According to Aristotle, we become what we do.²⁹ Education contributes to that process by building skills and habits of mind that are learned in a variety of ways. Psychologists have identified incremental methods for helping individuals learn. Rewards comprise part of this learning enterprise when they help individuals attend to the short- and long-term goals that drive their learning.³⁰

When students learn something well, they reduce their costs of doing it; that is, they can use their well-absorbed knowledge or well-practiced skills nearly automatically with little effort. The more automatic a requisite skill is, the faster a person reaches his or her goals. Skills such as recognizing letters exemplify the learning needed to reach the goal of reading. Students who struggle to distinguish a “b” from a “d” are unlikely to readily comprehend what they read. Once they achieve “automaticity” with such recognition skills, however, they can move on to word recognition and sentence comprehension. Mastering the prerequisite stages

makes the later stages less costly in time and effort, even enjoyable. Just as practice in sports makes a physical skill more automatic, practice in reading makes a mental skill more automatic.

Students typically must exert effort over some period of time to acquire sufficient levels of automaticity to achieve rigorous goals. Ideally, schooling offers efficient means of allowing learners to improve their knowledge and skills and acquire increasingly advanced forms of both. Educators who use rewards to help learners persist in the face of challenging tasks to gain automaticity also help them reduce the amount of effort needed later to attain their ever more challenging goals. Appropriate rewards improve learners' ability to perceive cues by guiding their attention to constructive action, reinforcing specific forms of learning, and rewarding high levels of achievement.³¹

During learning, repetition can help individuals experience the pleasure of increasingly easy accomplishment. Repeated cycles of presentation, action, and reinforcement can foster high levels of mastery. Complex forms of personal achievement are possible only when individuals set progressively challenging personal goals requiring sustained drive or grit to attain. When the personal goals of these individuals align with those valued in the communities in which they live, they acquire social and material rewards.³²

Some credibility should be given to theories and evidence that employees may be more effective when they are involved in setting goals to which they commit themselves.³³ Research suggesting students may similarly benefit will be summarized in Chapter 7.

Conclusion

Knowledge of the positive effects of rewards on motivation is well established in behavioral psychology despite the controversy in recent years over whether experimental evidence confirms or rejects the effectiveness of specific reward and punishment systems. Critics of the use of all or most rewards in learning are on the extreme end of a continuum of opinion on the subject. The results of rigorous research studies do not support their point of view, and they overlook or misrepresent research that contradicts their views.

Most experts recognize reward systems are especially valuable at the earliest ages to help students attain the habit of deferring gratification. Failure to develop this habit can handicap learners for the rest of their lives.

Students need rewards to engage in the difficult or tedious work of achieving automaticity, another key step in learning progress. Without rewards, fewer students develop the drive or grit needed to achieve high levels of skill.

Behavioral psychology provides theoretical support for the use of rewards in classrooms. Empirical research that supports this conclusion will be presented in Chapter 3. But first, let's review what economists contribute to the debate.

Notes

1. Jere Brophy, *Motivating Students to Learn* (Mahwah, NJ: Lawrence Erlbaum Associates, Publishers, 2004), p. 1.
2. Ron Alsop, *The Trophy Kids Grow Up: How the Millennial Generation Is Shaking Up the Workplace* (San Francisco, CA: Jossey-Bass, 2008).
3. Judy Cameron and W. David Pierce, *Rewards and Intrinsic Motivation: Resolving the Controversy* (Westport, CT: Bergin & Garvey, 2002), p. 172.
4. Eric Sheninger, "What Teachers Want You to Know," *USA Weekend*, August 23–24, 2013, p. 9.
5. From behavioral psychology, the term reinforcement refers to the use of positive stimuli following behavior that leads to repetition of the behavior. Unlike cognitive and motivational psychologies that emphasize internal states, behavioral psychology emphasizes observable or measurable results.
6. Edward L. Deci and Richard M. Ryan, *Intrinsic Motivation and Self-Determination in Human Behavior* (New York, NY: Plenum, 1985); Edward L. Deci, Richard Koestner, and Richard M. Ryan, "A Meta-Analytic Review of Experiments Examining the Effects of Extrinsic Rewards on Intrinsic Motivation," *Psychological Bulletin* 125, no. 6 (November 1999): 627–68.
7. Richard M. Ryan and Edward L. Deci, "Self-Determination Theory and the Facilitation of Intrinsic Motivation, Social Development, and Well-Being," *American Psychologist* 55, no. 1 (January 2000): 68–78.
8. Edward L. Deci and Richard M. Ryan, "Facilitating Optimal Motivation and Psychological Well-Being Across Life's Domains," *Canadian Psychology* 49, no. 1 (2008): 14.
9. Daniel H. Pink, *Drive: The Surprising Truth About What Motivates Us* (New York, NY: Riverhead Books, 2009), p. 35.
10. David C. Berliner and Bruce J. Biddle, *The Manufactured Crisis: Myths, Fraud, and the Attack on America's Public Schools* (New York, NY: Addison-Wesley Publishing Company, 1995).
11. *Ibid.*, p. 191.
12. *Ibid.*, p. 196.
13. *Ibid.*, p. 194.

14. Alfie Kohn, *Feel-Bad Education and other Contrarian Essays on Children and Schooling* (Boston, MA: Beacon Press, 2011); *The Schools Our Children Deserve: Moving Beyond Traditional Classrooms and 'Tougher Standards'* (Boston, MA: Houghton Mifflin, 1999); *Punished by Rewards: The Trouble with Gold Stars, Incentive Plans, A's, Praise, and Other Bribes* (New York, NY: Houghton Mifflin, 1993); *No Contest: The Case Against Competition* (Boston, MA: Houghton Mifflin, 1986).
15. Alfie Kohn, *Punished by Rewards*, pp. 25, iii, 119, 49.
16. "[I]t takes no courage, no thought, no effort, no patience, no talent, and no time to announce, 'Keep quiet and here's what you'll get.'..." Alfie Kohn, *Punished by Rewards*, p. 16. See also Alfie Kohn, *Feel-Bad Education*, p. 69.
17. For a good overview of the debate and the literature, see Michael Kremer, Edward Miguel, and Rebecca Thornton, *Incentives to Learn* (Cambridge, MA: Harvard University, 2007).
18. Judy Cameron and W. David Pierce, "Reinforcement, Reward, and Intrinsic Motivation," *Review of Educational Research* 6, no. 3 (Fall 1994): 363–423.
19. Robert Eisenberger, W. David Pierce, and Judy Cameron, "Effects of Reward on Intrinsic Motivation – Negative, Neutral, and Positive: Comment on Deci, Koestner, and Ryan (1999)," *Psychological Bulletin* 125, no. 6 (1999): 677–91.
20. Judy Cameron and W. David Pierce, *supra* note 18, p. 81.
21. Arthur J. Reynolds, Judy A. Temple, Dylan L. Robertson, and Emily A. Mann, "Long-Term Effects of an Early Childhood Intervention on Educational Achievement and Juvenile Arrest: A 15-Year Follow-up of Low-Income Children," *Journal of the American Medical Association* 285, no. 18 (May 9, 2001): 2339–46.
22. Martin Ford and Peyton Smith, "Building on a Strong Foundation: Five Pathways to the Next Level of Motivational Theorizing," in Kathryn Wentzel and Allan Wigfield, eds., *Handbook of Motivation at School* (Mahwah, NJ: Erlbaum, 2009), p. 272.
23. Martin Ford, *Motivating Humans: Goals, Emotions and Personal Agency Beliefs* (Newbury Park, CA: Sage Publishing, 1992).
24. An early example is Sharon D. Herzberger and Carol S. Dweck, "Attraction and Delay of Gratification," *Journal of Personality* 46, no. 2 (June 1978): 215–27.
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29. Aristotle, *Metaphysics*, trans. Joseph Sachs (Santa Fe, NM: Green Lyon Press, 1999).
30. See Theresa A. Thorkildsen, Courtney J. Golant, and Elizabeth Cambray-Engstrom, "Essential Solidarities for Understanding Latino Adolescents' Moral and Academic Engagement," in Cynthia Hudley and Adele E. Gottfried, eds., *Academic Motivation and the Culture of Schooling in Childhood and Adolescence* (Oxford: Oxford University Press, 2008), pp. 73–89.
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