ORIGINAL ARTICLE

The Incentive Dilemma: Intrinsic Motivation and Workplace Performance

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Abstract

Incentive plans are a core component of many radiology positions and are often considered a major factor in the ability to recruit and retain high-performing radiologists. Financial incentives are widely thought to be effective at motivating individuals, but there is considerable evidence to the contrary. In this report, the authors examine basic assumptions about financial incentives and debate the potential negative impact of financial incentive systems on performance at radiology practices.

Key Words: Financial incentives, motivation, extrinsic motivators, performance, intrinsic motivators, satisfaction

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> *It is in the inherent interest of every man to live as much at his ease as he can; and if his emoluments are to be precisely the same whether he does or does not perform some very laborious duty, to perform it in as careless and slovenly a manner that authority will permit.*
>
> —Adam Smith in *The Wealth of Nations*, 1776

INTRODUCTION

Incentive plans are a core component of many radiology positions in the United States and are often considered a major factor in the ability to recruit and retain high-performing radiologists. One theory behind incentives is that rewarding a particular behavior or task will make the individual receiving the reward more likely to perform the behavior or task. Over time, the rewarded behavior will become "learned" in that the individual will continue the behavior even in the absence of rewards. This approach is common in radiology with incentives to promote clinical and academic productivity, most commonly tied to the work relative value unit (wRVU) and, in the academic setting, the nonclinical or academic RVU (aRVU). Financial incentives are considered effective at motivating individuals and increasing productivity [1]; however, this doctrine is being challenged [2]. In this report, we examine basic assumptions and characteristics of financial incentive programs, review research regarding financial incentives and productivity, and debate the potential negative impact of financial incentive systems on individual and group performance at radiology practices.

TRADITIONAL INCENTIVE PROGRAMS

Not long after Adam Smith offered his viewpoint on human nature and workplace behavior in *The Wealth of Nations*, B. F. Skinner provided a theoretical rationale and "scientific rigor" to the idea that human behavior is driven by reward and punishment, termed *behaviorism*. The theory of behaviorism has a strong emphasis on the association between stimulus and response; reinforcement is key to successful "learning" of the desired behavior. Certain actions recur if rewards are offered, associating a positive meaning with the behavior (positive reinforcement). On the other hand, enacting a punishment after an action also alters behavior (negative reinforcement). Behavior is determined by its consequences, which make it more or less likely to recur [3]. Interestingly, most of the theory of behaviorism has been postulated on the basis of observations made on rats, pigeons, and dogs

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and presumes that human behavior is not distinct from that of animals [4,5]. Traditional financial incentive programs in radiology are based on the theory of behaviorism, with incentives designed to alter the behaviors of radiologists through positive and negative reinforcement. This notion has become dogma: a clever manager need only design the "right incentives," and his or her job is essentially done.

Academic Radiology Incentive Plans

An incentive model that has gained popularity in academic radiology departments over the past decade links incentives to both clinical and academic productivity using the wRVU and its academic equivalent, the aRVU, respectively [6-8]. The premise of this model is that the particular missions of the department (education, clinical productivity, research) can be steered in the direction desired, for instance, rewarding research and publications when an increase is needed. To incentivize clinical productivity, dollars are either assigned to individual wRVUs or applied to wRVU benchmarks, such as more than the 60th percentile, using a standardized productivity program (eg, Association of Administrators in Academic Radiology, Medical Group Management Association, or Faculty Practice Solutions Center) or greater than a certain number of wRVUs. For academic productivity, dollars or points are typically assigned to activities such as lectures, publications, administrative positions, and grant funding, with points being assigned a dollar value at the end of the incentive period. The amount of money committed to clinical and academic productivity varies across departments. The amount of financial incentives available as a proportion of total salary also varies by department, typically ranging from 5% to 30%.

The effect of financial incentives on various clinical and academic productivity measures reported in the literature suggests that financial incentives can indeed improve performance on their targeted metrics. In a study evaluating the impact of a pay-for-performance program on reducing final report turnaround time, the authors reported a statistically significant reduction in turnaround time that persisted after termination of the financial incentives [9]. A similar study evaluating the influence of technology adoption coupled with financial incentives found similar results, with the authors concluding that "the addition of a financial incentive leads to better performance than that achievable through technology alone" even after discontinuation of the financial incentive [10].

An important observation is the difference between signing a report (service worker–type activity) and more cognitive efforts, such as creating lectures for residents and conducting a research project (knowledge worker–type activity). The positive impact of financial incentives on service worker–type activities should not be assumed to work equally well for knowledge worker–type activities. In fact, there is evidence that financial incentives are not effective at motivating or improving performance of knowledge worker–type activities. The distinction here is in the level of cognitive effort; most RVU- and non-RVU-generating activities performed by radiologists require problem solving and are considered knowledge worker–type activities. Signing off reports and orders, reviewing the required number of random peer reviews for the month, and entering vacation into timesheets are considered service worker–type activities.

Key Assumptions

When a financial incentive program is instituted at a radiology practice to improve performance, there are seven implicit assumptions about incentives that justify their implementation:

1. Radiologists will not choose to work as effectively if they are not financially rewarded for their individual efforts. Otherwise, incentives and rewards would not be necessary.
2. Radiologists have different objectives than do their department and hospital leaders. Incentives (and punishments) are needed to redirect these radiologists to pursue the objectives of leadership.
3. Financial incentives improve overall performance and increase staff engagement.
4. Financial incentives promote innovation and creative problem solving.
5. Financial incentives enhance the recruitment and retention of high-performing radiologists because salary and incentives are more important to radiologists who are evaluating job options than other factors.
6. Financial incentives ensure equitable pay.
7. High performance should be rewarded with financial incentives.

Limitations and Unintended Consequences

In radiology practices, we conventionally follow behaviorism theory using financial incentives to increase productivity, efficiency, and work satisfaction and to decrease turnover. Most of the offered rewards are monetary: salary hikes, bonuses, or valuable benefits (such as tuition remission, employer retirement fund contributions, or subsidization of health insurance premiums). Other

rewards may include more paid vacation and/or academic time, academic rank, and authority. Yet monetary rewards can cause harm: they are often temporary and other available rewards may surpass their allure [11]. To understand this better, consider the cobra effect and the blood donor's dilemma.

The Cobra Effect. To cope with an alarming infestation of cobra snakes in the city, the governor and officials of the British colonial period in Delhi, India, offered a monetary reward to kill cobras and turn in the skins. This resulted in mass killing of cobras (increased productivity) in a short period of time. However, when the number of cobras decreased, people started breeding the snakes to continue receiving financial rewards. When the governor realized this, he withdrew the bounty. Disappointed cobra breeders eventually set the snakes free, and the cobra population went up. This is called the cobra effect and shows that monetary rewards can have unintended consequences, such as gaming the system, that are detrimental in the long run [12].

An example of the cobra effect can be seen in radiology practices when financial rewards are linked with wRVUs. To obtain more wRVUs, some radiologists "cherry-pick" higher wRVU examinations or those that are normal or less complicated. Therefore, more complicated and difficult cases are left unreported. In academic settings, radiologists will defer non-RVU activities (trainee education, consulting with colleagues and patients, answering the phone, protocolling studies) in lieu of reading cases to the detriment of their colleagues and department. Similarly, when peer reviews are linked with incentives, radiologists may skip complicated CT and MRI examinations and focus on radiography, sometimes skipping abnormal studies altogether. Examinations undergoing peer review may even be scored as concordant without the radiologist looking at the examination. This undermines the purpose of the peer-review process and reflects one of several unintended consequences of financial incentives in radiology departments.

The Blood Donor's Dilemma. Similarly, the number of individuals motivated to donate blood decreases after a monetary reward is offered. People donating blood for noble reasons stop donating because they feel that monetary compensation devalues the selfless nature of the act. In other words, the intrinsic motivation for donating blood (altruism) is replaced by an extrinsic motivator (money), and the extrinsic motivator is no longer sufficient to motivate them. This is called the blood donor's dilemma and demonstrates that extrinsic motivators can inadvertently replace intrinsic motivators, leading to decreased motivation for the desired behavior [11].

In one of the authors' department, there was a decision by leadership to set an incentive payment for protocoling CT and MRI studies, wherein the faculty members of the section were offered a modest financial incentive payment if they exceeded the current average number of studies protocoled per faculty member. The goal was to reduce the burden for the residents. For there to be an "average" level of protocols per faculty member, it meant that some faculty were below this threshold while others were already above it. The result of the incentive was that most of those who were previously below the target raised their contributions to match the threshold, and most matched it exactly. Several faculty members who were already above the threshold (having been intrinsically motivated to do so) reduced their protocoling efforts, some substantially. In the end, the incentive payout was made to all but one faculty member in the division, but the net number of studies protocoled by faculty did not change significantly.

THE DUAL-FACTOR THEORY OF MOTIVATION

The dual-factor theory of motivation was derived from a study on needs satisfaction and the reported motivational effects of these satisfactions on engineers and accountants, who are considered knowledge-type workers [13]. Herzberg et al [14] concluded that job satisfaction consisted of two separate independent dimensions; the first dimension was related to job satisfaction (satisfiers), and the second dimension was related to job dissatisfaction (dissatisfiers). It is noteworthy to mention that these concepts refer to knowledge workers who perform nonroutine cognitive problem solving, including radiologists. This model serves as a helpful platform to understand and explore job satisfaction and motivation in radiologists, as well as how applying behaviorism to knowledge worker–type activities is flawed.

The dual-factor theory of motivation has important implications for traditional incentive programs at radiology departments because these programs use financial inducements as the primary tool to reward and motivate radiologists. Yet according to the dual-factor theory, salary is a dissatisfier or an extrinsic motivator and therefore not an effective tool to improve motivation and performance. If salary is viewed as being too low, it can be a potent dissatisfier and lead to problems with recruitment and retention. The converse is not true, however; once salaries go above the threshold to be considered a

dissatisfier, further increases in salary as an extrinsic motivator do not contribute to job satisfaction, motivation, or performance. It also is a consideration that no one feels overpaid, and in fact they desire what they are paid. Incentives and raises therefore have a short-term effect because once individuals "earn" the financial incentive, they consider it to be a measure of their value to the company.

Intrinsic and Extrinsic Motivators for Radiologists

Although it is important to have appropriate, fair, and competitive compensation, Herzberg et al's [14] research shows that salary is not a strong motivator. Others have shown that high earners report similar job satisfaction as low earners [15]. Motivating performance by applying incentives may lead radiologists to mistake the reward for the goal. When this occurs and the incentive is removed or reduced, performance can rapidly deteriorate. Extrinsic and intrinsic motivators are listed in Table 1.

In reference to the role of money in workplace satisfaction, psychologist Barry Schwartz [2] noted that

> What people come to seek in work largely depends on what their work makes available. And the conditions of human labor created by the industrial revolution, and perpetuated thanks in part to theories from the social sciences [behaviorism], have systematically deprived people of fulfillment from their work. In doing so, they have deprived people of an important source of satisfaction—and produced inferior workers in the bargain.

He went on to say that satisfied workers are engaged and challenged by their work, feel that they are in charge of themselves, are able to achieve mastery or expertise, are provided opportunities for social interactions, and find what they do is meaningful. Money almost never comes up as a reason for work satisfaction.

A critical concept is that intrinsic and financial extrinsic motivators are not additive, but rather, they compete. For example, if a division is short staffed and a member unexpectedly becomes sick before weekend call, the division chief asks other members of his division if someone can cover. Conventional wisdom suggests that if he adds a financial supplement to covering the weekend call shift (which is typically not compensated), then members now have two reasons to cover the shift: one is to help out (altruism), and the second is for the financial incentive. However, a considerable amount of research tells us that these two factors are not additive and that instead, individuals who are offered the financial incentive are less likely to volunteer to cover the shift. This is because the decision to volunteer has been converted from a moral choice (ie, "it is the right thing to do") into a financial transaction (ie, "the added payment offered may not be worth the effort") [2].

Table 1. Extrinsic and intrinsic motivators for radiologists

Extrinsic	Intrinsic
Salary/incentives	Meaningful work/ sense of purpose
Time	Mastery
Working conditions	Autonomy
Personal relationships	Achievement
Quality of leadership	Recognition
Fairness	Responsibility
Reward	Mentoring
Punishment	Regular feedback
Policies	Participation in decision making

The concept that intrinsic and financial extrinsic motivators compete is directly applicable to a radiology department. Leadership generally sets measurable goals or expectations by which a payment will be made if a threshold performance is reached across various domains (eg, clinical, research, education, administrative, quality). The target audience for these goals is a heterogeneous group of professionals whose own professional interests and priorities likely span the breadth of all the missions of the department. Many of these individuals are then incentivized to shift some of their effort away from activities that are intrinsically motivating to meeting the threshold for payment for other activities to maximize the reward. Not all important activities can be included in financial compensation programs, so some of the excluded activities are no longer performed because they are not rewarded. In addition, those radiologists who are already exceeding the threshold goal set by the metric may reduce their effort to match the goal because overperforming is not rewarded. In all cases, the extrinsic reward undermines the intrinsic motivation that otherwise drives performance in the absence of financial incentives.

In *Drive*, Daniel Pink [16] lists a sense of purpose, mastery, and autonomy as the three main intrinsic motivators of workplace performance and satisfaction. People need to believe in a sense of purpose and that their work is meaningful. Many things contribute to a sense of purpose, including pursuit of knowledge, a sense of challenge, and creativity. Mastery is the display of great skill or technique. This is particularly

important for knowledge workers, who often need to be challenged by the work they do. Smart and creative people want to have autonomy and control over their work. They should be given ownership of their work and latitude in how to meet goals.

DISCUSSION

In a report about burnout and radiologists, the ACR Commission on Human Resources noted that burnout is greatest among diagnostic radiologists compared with all physicians and listed several risk factors relevant to our discussion: sources of job dissatisfaction, work overload, unfair supervision, lack of control, poor intellectual stimulation, and poor relationships with other members of the health care team [17]. The link between burnout and workplace satisfaction is clear, and we have provided evidence that workplace satisfaction is driven more by intrinsic motivators such as purpose, mastery, and autonomy than extrinsic motivators such as salary and financial incentives. The most profound observation is that the widespread use of extrinsic motivators, such as financial incentives, may replace the more effective intrinsic motivators over time, creating a radiology workforce that is now dependent on, but not satisfied by, salary and financial incentives. This may help explain why nearly 68% of junior academic radiologists leave academic after an average of 3 years to join private practice [18,19].

There are several important considerations in using the information presented in this article to establish a more satisfied and motivated workforce in radiology departments. A central tenet is highlighted by Barry Schwartz [2]:

> The lesson here is that just how important material incentives are to people will depend on how the human workplace is structured. And if we structure it in keeping with the false idea that people work only for pay, we'll create workplaces that make this false idea true.

This suggests that leaders should either remove financial incentives tied to performance in knowledge worker–type activities or make the incentives so easy to attain that they essentially become part of the base salary. On the other hand, it is important to offer appropriate compensation to avoid the risk that salary will become a dissatisfier, acknowledging at the same time that increasing financial compensation in the form of incentives and bonuses does not proportionally increase satisfaction or motivation [20].

In his book *The Human Equation*, Jeffrey Pfeffer [21] described the qualities of a workplace that drive success:

1. They provide a high degree of employment security, which builds employee loyalty and trust.
2. They rely on self-managed teams and decentralized decision making. That is, employees are given a lot of discretion and autonomy. This also enhances trust, in addition to reducing the need for employees whose main job is to watch other employees.
3. They pay more than the market demands, which makes employees feel valued. But they do not rely very much on individual incentives to induce people to work hard. When the company does well, all employees benefit through some form of gain sharing. They're all in it together.
4. They provide extensive training, both when people start to work and as an ongoing process. This training represents a significant investment in employees, which again builds loyalty and trust. And continued training means that employees keep facing new challenges and developing new skills.
5. They measure employee performance, but they do not overmeasure employee performance, trusting that their employees will want to do right by the company and, with enough training, will succeed.
6. They put great emphasis on the company mission, not just in occasional speeches by the CEO but in day-to-day practices up and down the organization.

A recurring theme is that of loyalty and trust, which is created when employees believe that leadership considers the well-being of their employees as paramount. Therefore, the notion of productivity must include employee well-being.

Workable Alternatives to Financial Incentives

In structuring a workplace environment that promotes the value of intrinsic motivators, leaders must first understand which intrinsic motivators drive the individuals in their department. This requires leaders to develop relationships with employees and have ongoing dialogue about the importance of purpose, mastery, and autonomy. Equally important, radiologists should engage in self-reflection to gain insight into what truly motivates them and provide suggestions as to how the environment can be designed to emphasize the intrinsic value of the work.

It has been suggested that building strong organizational cultures allows businesses to achieve a competitive advantage [22]. Profound advantages can be seen in companies that become more "communal," in which there are arrangements for helping employees in need, more company-sponsored social events, assistance

resolving work-family issues, and actively fostering long-term employment relationships [23]. Despite evidence that organizational culture directly influences motivation and performance, it has been shown that most organizations in the United States have in recent years moved systematically to more distant and transactional relationships with their employees; radiology is no exception [23].

Leaders and employees should work together to achieve a workplace that values intrinsic motivators over financial incentives. The message is the same regardless of whether we are considering academic or private practice radiologists: "If we design workplaces that permit people to do work they value, we will be designing a human nature that values work" [2].

TAKE-HOME POINTS

- Workplace satisfaction is driven more by intrinsic motivators, such as purpose, mastery, and autonomy, than extrinsic motivators, such as salary and financial incentives.
- According to the dual-factor theory, salary is a dissatisfier or an extrinsic motivator and therefore not an effective tool to improve motivation and performance for knowledge worker–type activities.
- The widespread use of extrinsic motivators, such as financial incentives, may replace the more effective intrinsic motivators over time, creating a radiology workforce that is now dependent on, but not satisfied by, salary and financial incentives.

REFERENCES

1. Sarwar A, Boland G, Monks A, Kruskal JB. Metrics for radiologists in the era of value-based health care delivery. Radiographics 2015;35:866-76.
2. Schwartz B. Why we work. New York: Simon & Schuster; 2015.
3. Catania AC, Harnad SR, Skinner BF. The selection of behavior: the operant behaviorism of B.F. Skinner: comments and consequences. Cambridge, United Kingdom: Cambridge University Press; 1988.
4. Skinner BF. About behaviorism. New York: Knopf; 1974.
5. Skinner BF. Reflections on behaviorism and society. Englewood Cliffs, NJ: Prentice-Hall; 1978.
6. Duszak R Jr, Muroff LR. Measuring and managing radiologist productivity, part 2: beyond the clinical numbers. J Am Coll Radiol 2010;7:482-9.
7. Duszak R Jr, Muroff LR. Measuring and managing radiologist productivity, part 1: clinical metrics and benchmarks. J Am Coll Radiol 2010;7:452-8.
8. Chung JH, Paushter DM, Katzman GL. Impact of an incentive compensation plan on academic productivity. J Am Coll Radiol 2017;14:558-60.e1.
9. Boland GW, Halpern EF, Gazelle GS. Radiologist report turnaround time: impact of pay-for-performance measures. AJR Am J Roentgenol 2010;195:707-11.
10. Andriole KP, Prevedello LM, Dufault A, et al. Augmenting the impact of technology adoption with financial incentive to improve radiology report signature times. J Am Coll Radiol 2010;7:198-204.
11. Gneezy U, Meier S, Rey-Biel P. When and why incentives (don't) work to modify behavior. J Econ Perspect 2011;25:191-210.
12. Martinelli C, Parker SW, Pérez-Gea AC, Rodrigo R. Cheating and incentives: learning from a policy experiment. Am Econ J 2018;10:298-325.
13. House RJ, Wigdor LA. Herzberg's dual-factor theory of job satisfaction and motivation: a review of the evidence and a criticism. Person Psychol 1967;20:369-90.
14. Herzberg F, Mausner B, Snyderman BB. The motivation to work. New Brunswick, NJ: Transaction; 2011.
15. Judge TA, Piccolo RF, Podsakoff NP, Shaw JC, Rich BL. The relationship between pay and job satisfaction: a meta-analysis of the literature. J Vocat Behav 2010;77:157-67.
16. Pink DH. Drive: the surprising truth about what motivates us. New York: Penguin; 2011.
17. Harolds JA, Parikh JR, Bluth EI, Dutton SC, Recht MP. Burnout of radiologists: frequency, risk factors, and remedies: a report of the ACR Commission on Human Resources. J Am Coll Radiol 2016;13:411-6.
18. Willing SJ, Phillips CD. Should pay in radiology be tied to productivity? The case in favor. Acad Radiol 2004;11:69-75.
19. Taljanovic MS, Hunter TB, Krupinski EA, Alcala JN, Fitzpatrick KA, Ovitt TW. Academic radiology: the reasons to stay or leave. Acad Radiol 2003;10:1461-8.
20. Rajiah P, Bhargava P. Motivational leadership: tips from the business world. J Am Coll Radiol 2016;13:585-9.
21. Pfeffer J, Jeffrey P. The human equation: building profits by putting people first. Cambridge, MA: Harvard Business Press; 1998.
22. Kotter JP. Corporate culture and performance. New York: Simon & Schuster; 2008.
23. Pfeffer J. Working alone: whatever happened to the idea of organizations as communities? America at work. New York: Springer; 2006.