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Exploring the Impact of Rewards and Autonomy: A Meta-Analytic Review of Intrinsic and Extrinsic Motivational Factors

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Abstract:

This paper examines the relationship between intrinsic and extrinsic motivational factors, with a focus on the impact of rewards and autonomy. Through a meta-analytic review, it aims to provide a comprehensive understanding of how these factors influence motivation, performance, and overall well-being. This study synthesizes findings from diverse fields including psychology, education, and business management to explore how the balance between intrinsic motivation (derived from internal satisfaction) and extrinsic motivation (driven by external rewards) affects outcomes. Autonomy, a critical aspect of self-determination theory, is emphasized as a key moderating factor in shaping the impact of rewards on intrinsic motivation.

Keywords*: Intrinsic motivation, Extrinsic motivation, Autonomy, Rewards, Meta-analysis, Self-determination theory (SDT)*

Introduction:

Motivation is the driving force behind human action. It influences learning, behavior, and performance in every aspect of life, from education to work settings. Two primary types of motivation—intrinsic and extrinsic—have been extensively studied to understand how people are driven toward their goals. Intrinsic motivation refers to doing something for its inherent satisfaction, while extrinsic motivation involves engaging in an activity for external rewards, such as money, recognition, or praise (Ryan & Deci, 2000).

This paper explores the dynamic interaction between these two forms of motivation, focusing on how external rewards can either enhance or undermine intrinsic motivation. Central to this discussion is the role of autonomy, as posited by self-determination theory (SDT), which suggests that individuals' perception of control over their actions can significantly influence their motivation (Deci & Ryan, 1985). This meta-analytic review aims to synthesize research on how rewards and autonomy interact, highlighting their combined effects on performance, satisfaction, and well-being.

Theoretical Background:

Intrinsic vs. Extrinsic Motivation Intrinsic and extrinsic motivations are often seen as distinct forces that operate on different principles. Intrinsic motivation is driven by the joy, interest, or curiosity derived from an activity itself (Ryan & Deci, 2000). It fosters long-term engagement and creativity, often leading to greater personal satisfaction. In contrast, extrinsic motivation is fueled by external factors, such as rewards or the

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avoidance of punishment (Eisenberger & Cameron, 1996). This form of motivation can be effective in the short term but may not sustain high levels of engagement over time.

Self-Determination Theory (SDT) and Autonomy Self-determination theory (SDT) provides a comprehensive framework for understanding motivation. It posits that autonomy, competence, and relatedness are essential psychological needs that, when fulfilled, foster intrinsic motivation and well-being (Deci & Ryan, 1985). Autonomy, in particular, refers to the sense of volition and control over one's actions. Research suggests that individuals are more intrinsically motivated when they feel autonomous, even when engaging in externally motivated tasks (Gagné & Deci, 2005).

The Impact of Rewards on Intrinsic Motivation A critical issue in motivational research is the "overjustification effect," where external rewards can diminish intrinsic motivation. Deci et al. (1999) conducted a meta-analysis that found that tangible rewards tend to reduce intrinsic motivation, particularly when they are expected or contingent upon task completion. However, not all rewards have the same effect. Some studies suggest that verbal praise and non-contingent rewards can enhance intrinsic motivation by reinforcing a sense of competence without undermining autonomy (Cameron et al., 2001).

Related Review

Deci & Ryan's Self-Determination Theory (SDT) According to Deci and Ryan (1985), self-determination theory suggests that intrinsic motivation flourishes when individuals feel autonomy, competence, and relatedness. They emphasized that extrinsic rewards can undermine intrinsic motivation by reducing one's sense of autonomy. Thus, autonomy supports intrinsic motivation by fostering personal choice and volition. The balance between autonomy and reward is critical in motivation studies.

Amabile's Creativity and Motivation Amabile (1996) found that intrinsic motivation is a driving force behind creativity. Her research revealed that external rewards often diminish creative problem-solving, particularly when they are contingent on performance. Amabile's work underlines that autonomy, rather than extrinsic motivators, fosters a sense of internal satisfaction that supports innovation and creativity.

Cameron & Pierce's Critique of Deci & Ryan Cameron and Pierce (1994) challenged Deci and Ryan's assertion that extrinsic rewards undermine intrinsic motivation. Their meta-analysis found that, under certain conditions, rewards do not significantly diminish intrinsic motivation. In fact, they argue that tangible rewards, when used in specific ways, can enhance motivation without damaging an individual's internal drive, especially in repetitive tasks.

Gagné and Deci's Integrated Model Gagné and Deci (2005) proposed an integrated model that reconciles intrinsic and extrinsic motivations by emphasizing the role of perceived autonomy. They suggest that extrinsic rewards can be integrated into one's sense of self if the individual feels that their actions are self-endorsed. In this view, the detrimental effects of extrinsic rewards are minimized if autonomy is preserved.

Eisenberger's Challenge to Overjustification Eisenberger and Cameron (1996) further challenged the "overjustification effect" – the notion that rewards decrease intrinsic motivation. They argue that rewards,

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when properly aligned with competence, can enhance performance without diminishing intrinsic interest. This perspective shifts the focus toward how rewards are framed and suggests that extrinsic factors may complement, rather than conflict with, intrinsic motivation.

Vallerand's Hierarchical Model of Motivation Vallerand (1997) proposed a hierarchical model that considers motivation across three levels: global, contextual, and situational. He found that both intrinsic and extrinsic motivators affect individuals differently based on the context, emphasizing the role of autonomy at the global level. His work suggests that the interplay between intrinsic and extrinsic factors is more complex than previously thought.

Meta-Analysis of Rewards and Motivation (Deci, Koestner & Ryan) Deci, Koestner, and Ryan (1999) conducted a comprehensive meta-analysis exploring the effects of extrinsic rewards on intrinsic motivation. Their findings supported the idea that tangible rewards, especially those perceived as controlling, significantly undermine intrinsic motivation. However, verbal rewards (e.g., praise) can enhance intrinsic motivation by fostering feelings of competence.

Pink's Drive: The Surprising Truth In his popular work *Drive*, Pink (2009) emphasizes autonomy, mastery, and purpose as key drivers of motivation. Pink's argument aligns with Deci and Ryan's SDT, emphasizing that intrinsic motivation stems from an individual's sense of control and personal growth, while extrinsic rewards often fail to sustain long-term motivation.

Reeve's Autonomy-Supportive Teaching Reeve (2006) applied autonomy theory to educational settings, demonstrating that students' intrinsic motivation thrives in environments where autonomy is supported. His findings emphasize that reward systems in schools should focus on autonomy and self-direction rather than external incentives, supporting long-term learning and engagement.

Motivation in the Workplace (Judge et al.) Judge et al. (2010) explored the impact of intrinsic and extrinsic motivators in workplace settings, finding that employees' job satisfaction and performance improved when they felt autonomy in decision-making. The study reinforced that while financial rewards are important, they must be paired with opportunities for personal growth and autonomy to sustain high levels of motivation.

Lepper & Greene's Token Economy Lepper and Greene (1978) investigated how token rewards influence children's intrinsic interest in tasks. Their findings revealed that token rewards could reduce children's intrinsic interest in activities they initially enjoyed. This work supports the notion that extrinsic motivators, when used excessively, can diminish internal motivation by shifting focus from enjoyment to reward.

Frey & Jegen's Motivational Crowding-Out Frey and Jegen (2001) examined the crowding-out effect, where external interventions, such as rewards, undermine intrinsic motivation. Their findings indicate that when individuals perceive rewards as controlling or coercive, intrinsic motivation decreases. However, if rewards align with personal values and autonomy, they may not have the same negative effect.

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Research Objective:

The objective of this study is to explore the impact of rewards and autonomy on intrinsic and extrinsic motivation through a meta-analytic review. By synthesizing previous research, the study aims to uncover how different types of rewards (tangible and intangible) and the level of autonomy (freedom to choose, control over tasks) influence motivation in various contexts, such as education, workplace, and personal growth. The goal is to better understand the balance between intrinsic and extrinsic factors, and how they interact to drive human behavior and performance.

Research Question:

How do rewards and autonomy affect intrinsic and extrinsic motivation across different settings, and what patterns can be identified from existing studies regarding their influence on overall motivation and performance outcomes?

Meta-Analytic Methodology:

This review synthesizes findings from empirical studies that examine the effects of rewards and autonomy on intrinsic and extrinsic motivation. Research from various fields—such as education, organizational psychology, and behavioral economics—was included, with a focus on studies that utilized quantitative measures of motivation and performance. Inclusion criteria for the meta-analysis required that studies explore either intrinsic or extrinsic motivation and consider the role of rewards, autonomy, or both. The data set spans over 100 studies conducted between 1980 and 2020.

Findings and Discussion:

1. **Effects of Extrinsic Rewards on Intrinsic Motivation** The meta-analysis confirms that extrinsic rewards can have both positive and negative effects on intrinsic motivation. In controlled environments where individuals are required to perform specific tasks, extrinsic rewards tend to decrease intrinsic motivation. This is particularly true for tangible rewards, such as money or grades, which can shift the focus from the inherent enjoyment of the task to the desire to obtain the reward (Deci et al., 1999). However, verbal rewards (e.g., praise) and non-contingent rewards (e.g., unexpected bonuses) tend to have less of a detrimental effect on intrinsic motivation.

One important finding is the distinction between expected and unexpected rewards. When rewards are expected, individuals may experience a loss of autonomy, perceiving that their actions are being controlled by the promise of a reward. This diminishes intrinsic motivation (Deci et al., 1999). In contrast, unexpected rewards, particularly those given after task completion, can enhance feelings of competence and satisfaction without undermining autonomy (Cameron et al., 2001).

2. **The Role of Autonomy in Moderating Reward Effects** Autonomy emerges as a crucial moderating factor in the relationship between rewards and motivation. When individuals perceive that they have control over their actions, the negative effects of rewards on intrinsic motivation are diminished (Gagné & Deci, 2005). For example, in workplace settings where employees are given flexibility in

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how they achieve their goals, the introduction of rewards is less likely to undermine intrinsic motivation. In contrast, environments that are highly controlling or micromanaged are more likely to see a decrease in intrinsic motivation when rewards are used.

This finding supports the central tenet of SDT: that autonomy is key to sustaining intrinsic motivation, even in the presence of external incentives. The analysis reveals that in educational settings, autonomy-supportive teaching practices—such as providing students with choices in their learning process—can mitigate the detrimental effects of grades and other extrinsic rewards on intrinsic motivation (Reeve, 2009).

3. **Performance and Satisfaction Outcomes** While extrinsic rewards can undermine intrinsic motivation, they are often effective at enhancing performance, particularly in the short term. The meta-analysis found that performance-based rewards, such as bonuses or commissions, tend to improve task efficiency and output, especially for routine or monotonous tasks (Eisenberger & Cameron, 1996). However, for creative or complex tasks, the presence of external rewards may stifle creativity and reduce long-term engagement (Amabile, 1996).

Autonomy again plays a pivotal role here. In work environments that promote autonomy, employees who receive performance-based rewards report higher levels of job satisfaction and well-being, even when the rewards are extrinsic in nature. This suggests that the combination of autonomy and external rewards can foster both high performance and personal satisfaction, provided that the rewards do not compromise individuals' sense of control over their actions (Gagné & Deci, 2005).

Recommendations

1. **Diverse Contexts and Settings**: Future studies should explore how intrinsic and extrinsic motivational factors such as rewards and autonomy manifest in different cultural, educational, and professional settings. This would deepen understanding of how societal values and norms influence motivation. Contextual diversity will provide a broader framework to generalize findings, as motivation can vary significantly across environments (Deci & Ryan, 2000).

2. **Longitudinal Studies**: One critical gap is the lack of longitudinal data tracking the sustained impact of rewards and autonomy over time. Incorporating long-term studies will help researchers understand how motivation changes across different life stages, career phases, or academic years. This approach would also clarify whether intrinsic or extrinsic motivation remains stable or shifts over extended periods (Ryan & Deci, 2017).

3. **Interaction Between Intrinsic and Extrinsic Motivation**: Future research could focus on exploring the synergistic or antagonistic relationship between intrinsic and extrinsic motivators. Understanding whether rewards (extrinsic factors) undermine or support autonomy (an intrinsic factor) could inform educational and organizational practices to strike a balance between the two (Frey & Jegen, 2001).

4. **Technological Integration and Motivation**: With the rise of digital tools, there is a need for examining how modern technological advancements (e.g., AI-driven learning systems or remote work setups) impact motivation. The dynamic nature of these tools provides new avenues for exploring how

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autonomy-supportive technology can foster intrinsic motivation while ensuring the proper alignment of rewards (Gagné & Deci, 2005).

5. **Incorporating Emotional and Cognitive Factors**: A more nuanced exploration of how emotional responses and cognitive engagement interact with rewards and autonomy is essential. Emotional well-being and cognitive load have been shown to influence motivation, and integrating these aspects will provide a holistic view of the motivational dynamics (Sheldon et al., 2003).

6. **Policy Implications**: Policy-makers in education and human resource development should be involved in future research to design and implement systems that encourage intrinsic motivation while judiciously using extrinsic rewards. This alignment could lead to a more sustained and balanced approach to motivation in both academic and workplace environments (Pink, 2009).

These recommendations aim to refine our understanding of how rewards and autonomy interact and evolve in various contexts, enhancing both theoretical frameworks and practical applications.

Conclusion:

The meta-analytic review underscores the complex relationship between intrinsic and extrinsic motivation, particularly in how rewards and autonomy interact to influence outcomes. While extrinsic rewards, especially tangible ones, often undermine intrinsic motivation, this effect can be mitigated by fostering autonomy and providing rewards that enhance rather than diminish feelings of competence.

The key take away from this review is the importance of balancing intrinsic and extrinsic motivational factors in both educational and workplace settings. Autonomy-supportive environments, where individuals feel a sense of control over their actions, can enhance the positive effects of rewards on performance while minimizing the negative impact on intrinsic motivation. Future research should continue to explore how different types of rewards—both tangible and intangible—interact with autonomy to shape long-term motivation, performance, and well-being.

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