Cooperative, Competitive and Hybrid Motivated Information Processing in Teams

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Abstract

Currently, there is a proliferation of studies examining group and team dynamics, as an increasing number of organizations are incorporating group and team-based structures. Extant literature has provided mixed findings regarding the influence of reward structures on various team outcomes. E.g., More rapid activity in teams has been found for competitive reward structure, with diminishing quality of work (Mailer, 1929). Which type of reward structure (competitive, cooperative or hybrid) has the best implication for team performance in organizations? This paper aims to address this question by incorporating the mechanism (i.e., epistemic and social motivation) and moderating variable (i.e., need for affiliation). Understanding the motivated information processing in groups model (MIP-G) and antecedents of team performance has important managerial implications. This moderator (i.e., need for affiliation) has not been examined in relation to all three types of reward structures in past studies. This paper hopes to extend the literature of reward structures and motivated information processing model by encompassing this new boundary condition. It is essential to incorporate novel contexts while examining relationships among variables as this approach further develops existing theories.

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**Keywords**


**Broader Implications**

The utilization of teams and groups-based structures are becoming more prevalent in organizations. It is essential for managers to understand the cognitive and behavioral components of team members that affect team performance. Extant literature has examined the effect of diverse reward structures on the cognitive and behavioral components of individuals. Nevertheless, the three types of reward structures have not been examined in concert extendedly. Further, examining the mechanism through which these reward structures have impact on team performance will shed further light on the literature of groups and teams. This study also incorporated boundary conditions (i.e., individual differences) to enrich the literature of groups and teams. This study also incorporated boundary conditions (i.e., individual differences) to enrich the literature of groups and teams and motivated information processing. Improvement of performance of each team within an organization can collectively contribute to an overall improvement of organizational performance, and lead to an organization's success and growth in the long run.

**Literature Review**

Groups can be defined as two or more individuals who have some interdependence or relationship and who have an influence on each other through their interactions (Paulus, 1989; Forsyth, 1999). On the other hand, teams are groups that work together for a common goal in the organization (Cohen & Bailey, 1997). In this paper, the terms group and team will be used interchangeably as done in past research. Earlier research on cooperation and competition in groups have provided mixed findings regarding group outcomes. E.g., more rapid activity was found in competing groups, even though, the quality of the work was inferior (Mailer, 1929; Triplett, 1898). Other studies have indicated that cooperative group entailed more locomotion (Deutsch, 1949a). Therefore, it is necessary to examine what factors can explain the various effects of different reward structures on team performance. As groups and teams are prevalent in modern day organizations, it is extremely crucial for managers to find ways to enhance motivation in team members as it will have positive implications for team performance. This proposal hopes to address the gap in the literature by examining the effects of three types of reward structures (i.e., cooperative, competitive and hybrid) with the condition that members in a team will be interdependent. Prior studies have examined the influence of the three reward structures on team outcomes (Pearsall, Christian & Ellis, 2010) and motivated information processing in cooperative reward structure (De Dreu, 2007). The unique contribution of this study entails the examination of the three reward structures with motivated information processing in group model and the incorporation of individual differences (i.e., need for affiliation as the moderator).

It has been argued that incentives stimulate workers by initiating a linkage between employee effort and reward (Pearsall et al., 2010). Therefore, when valued rewards match with explicit performance goals, workers will employ an increased and dedicated cognitive and behavioral endeavor toward the achievement of those goals (Latham & Pinder, 2005). Cooperative social situations are considered to be “promotively interdependent” with respect to goals, i.e., the motion of any individual toward a goal would enhance the possibility of other members of the team achieving that goal (Raven & Eachus, 1963). The authors added that competitive social situations are “contriently interdependent”, i.e., the motion of any individual toward a goal diminishes the possibility of other team members from reaching their respective goals. This condition entails that the goal is valuable to all team members and cannot be apportioned among members. The findings of the study (Raven & Eachus, 1963) indicated that compared to competitive teams, cooperative teams resolved their problems faster, assessed team members more favorably, exhibited less hostility, were more drawn to tasks and more likely to create leaders. Shared or cooperative rewards signal prosocial incentives, allowing attention and endeavor toward communication among team members (De Dreu, Nijstad, & Van Knippenberg, 2008), nevertheless, these rewards may lessen member responsibility and effort (e.g., social
loafing may occur). In contrast, individual rewards (i.e., competitive reward) can induce higher member satisfaction and more alignment between individual’s behavior and individual’s outcomes but may inhibit team members from helping their teammates (De Dreu, 2007; Shea & Guzzo, 1987). The outcomes of these two reward structures will depend on team task interdependence, which is the extent to which the team’s task performance depends on the coordinated endeavors and skills of team members (Wageman & Baker, 1997). Goal interdependence theory on cooperation and competition asserts that people’s conception in terms of how their goals are interconnected govern how they depend on each other, which consequently influence their performance and group cohesiveness (Deutsch, 1949b).

**Reward Structures**

It is important to note that the motivation process that works at the team level is comparable to the process at the individual level (Chen & Kanfer, 2006). The authors added that at the individual level, people have motivational predispositions to focus and continue endeavor to achieve a valued goal. At the team level, team members jointly harmonize the governance, magnitude and perseverance of their efforts via communal interactions. Cooperative reward structure generates a context in which team members are prompted to act and respond in a similar way, in addition, this reward structure also leads to improved conflict management, improved learning and more efficient performance (De Dreu, 2007). Such type of reward structures improve performance by reducing visible variations in performance among group members that can potentially hinder teamwork, information distribution and assistance. The drawbacks include diminished individual responsibility and allowance of contribution expendability which can incite team members to withdraw their inputs (Kurau & Williams, 1993). An occurrence named “social loafing” has been found to be prevalent among poor performers in cooperative groups (Latane, Williams & Harkin, 1979). In order to prompt individuals to contribute more to the team, individual rewards can be provided. Nevertheless, individual rewards may promote proself motivation leading members to augment their own benefits while disregarding team outcomes (De Dreu et al., 2008), which can steer team members toward reduced collaboration and sporadic teamwork behaviors (e.g., depleted information sharing). In a competitive reward structure, performance variations become visible as members in a work team with superior performance are rewarded whereas those with inferior performance are penalized (Beersma et al., 2003). The authors added that competition stimulates productivity and transformation as it fuels individuals to surpass each other by performing more rapidly or intelligently, thereby, satisfying the long-term requisite demands of an organization. On the other hand, some researchers argue that a competitive structure maybe detrimental for team productivity as members in such reward structures have tendencies to prioritize their own goals over their organization’s goals. In order to counteract the disadvantages of competitive and cooperative reward structures, hybrid reward structure maybe implemented which compensates both individual and team efforts (Pearsall et al., 2010). In this type of reward structure, individuals have the motivation to complete their individual tasks which can prevent social loafing or effort withdrawal that may happen in a cooperative reward structure. Concurrently, shared rewards in a hybrid structure also prevent members from engaging in selfish behaviors (e.g., holding back sharing of information) which are exhibited in competitive reward structures. Consequently, team performance is expected to be superior in a hybrid structure compared to cooperative and competitive reward structure.

**Reward structure and Means Interdependence**

Past research on cooperation and competition has argued for independence in competition and interdependence in cooperation (Deutch, 1949b; Miller & Hamblin, 1963). Nevertheless, attributing interdependence strictly to cooperation disregards the argument that even in the interdependent condition, tasks can be split into smaller tasks. Goal interdependency theory indicates that cooperative reward structures generate a perception of joint destiny and facilitates encouraging behavior thereby inciting individuals to be concerned about their team members’ welfare (Beersma et al., 2003). In contrast, in competitive reward structures, individuals keep important information and knowledge about experience to themselves rather than distributing it to others in order to facilitate individual goals. In this study, the given condition for all reward structure is “means interdependence”. “Means interdependence” refers to the extent to which the task of an individual
team member is influenced by the conduct of other members in the team, therefore, necessitating collaboration (Beersma et al., 2003). Means interdependence is expected to enhance performance in a cooperative structure, as the requirement to collaborate with other team members encourage individuals in cooperative structure to share their knowledge and information more extensively. In this case, individuals are progressing toward a shared goal with those upon which they are dependent resulting in mutual benefits (Raven & Eachus, 1963). Alternately, means interdependence in a competitive situation may present a conflict of interest for the individual, since individuals are required to depend on those who may hinder them from reaching his/her own goal (Raven & Eachus, 1963).

Pearsall et al. (2010) argued that for high task interdependence, hybrid reward structures would result in the most efficient performance outcomes. In such reward structures, provision of individual rewards would incite individuals to attain their own goals. Additionally, team rewards would encourage individuals to share information and knowledge with other team members on whom they are dependent and cooperate with them in order to achieve their shared goals. The authors explained how hybrid reward structures may allow for more efficient information allocation, as members will be induced to share their skills and knowledge with other team members in order to enhance team performance. Additionally, social loafing is less likely to be exhibited in a means interdependence hybrid reward structure, as members will have the opportunity to receive individual rewards and be required to depend on other team members.

Motivated Information Processing in Groups (MIP-G model)

Epistemic motivation alludes to the willingness to endeavor an exhaustive, substantial and accurate understanding of group task or decision problem at hand. Social motivation refers to the individual predisposition for outcome distributions between oneself and other group members and can be divided into two categories: pro-self (i.e., the individual is focused only with one’s own outcomes) and prosocial (i.e., the individual is concerned with joint outcomes and fairness) (De Dreu et al., 2008). It is necessary to examine the antecedents and moderators of motivation, as these two types of motivations can affect individual and group creative performance, characteristics of information interchange and fusion, and the nature of group decisions. The two motivations are also conceptualized as distinct and independent, e.g., an individual with high epistemic motivation may have either high or low social motivation. Information processing in groups incorporates activities that transpire within and among the minds of group members (Ickes & Gonzalez, 1994). Therefore, individual information processing is amalgamated with interaction, indicating group-level information processing (van Knippenberg, De Dreu, & Homan, 2004).

In order to explain how epistemic and social motivation at the individual level influence group level quality of judgment and decision, I will use the MIP-G model demonstrated by De Dreu et al. (2008). The model entails that individual’s epistemic motivation affects the degree to which novel information is sought out and originated, and how extensively and intentionally the information is processed. In contrast, individual’s prosocial motivation (i.e., social motivation) partial out the type of information that one seeks, creates, and processes. Members in a team with prosocial motivation will seek information that is instrumental to group’s outcomes, whereas members with proself motivation will opt for information that can facilitate individual goals. Therefore, individual’s information processing influences how information is dispersed, interchanged and combined at the group level. Team members with prosocial motivation will likely share more precise information regarding task pertinent choices and decision options, as these individuals are concerned about team performance. On the other hand, prosocial team members will likely attempt to enhance individual goals and dispositions by prudently holding back information or directing information towards personal agendas. Prosocial motivation, nevertheless, may lead individuals to be biased about their information processing which may incite them to attune more to maintaining concordance instead of attempting to reach superior decision quality. Hybrid reward structures can counteract the negative aspects of prosel and prosocial motivation by encouraging members to extensively process information and share accurate information to promote both individual and team goals.

Hypotheses
The goal of this study is to demonstrate the effect of various reward structures (i.e., cooperative, competitive and hybrid) on the motivated information processing system of team members, and consequently the effect of epistemic and social motivation on team performance. Pearsall et al. (2010) has examined the effect of the three reward structures on performance. In order to extend the theory, I have incorporated the mechanism of motivated information processing in groups. Further, I have incorporated the boundary conditions (i.e., need for affiliation) in order to introduce more complexity in the MIP-G model to reflect organizations. It is essential for researchers to include boundary conditions as it provides a more comprehensive understanding of the psychological processes that occur in individuals working in a team. An experimental study has been conducted in which the three types of reward structures have been manipulated. It is predicted that hybrid reward structures entail the positive aspects of both competitive and cooperative reward structures and diminish their detrimental effects on team performance. That is, provision of individual and shared rewards in a hybrid reward structure prevents members from social loafing (traditionally induced by cooperative reward structures) and hindrance of selfish behaviors (incited by competitive reward structures).

Student participants will be asked to take part in the study and will be assigned to teams of five members each. The groups will be assigned randomly to the three reward structure conditions. Within each team, each member will be rated on the number of novel creative ideas generated. The team will be asked to create an advertisement based on a single product. The mechanism includes epistemic and social motivation which will be self-reported by the participants. The moderators include need for affiliation which will be also be self-reported by the participants. The dependent measure includes individual and team performance which will be rated by me (i.e., the researcher) and fellow school students. Individual performance will be rated by the number of novel creative ideas generated and team performance will be evaluated based on the quality of advertisement jointly created by each team.

**Reward structure & Motivation.** In a competitive reward structure, where the team members’ goals are interdependent, individual members have the incentives to achieve their own goals. In addition, when one member attempts to accomplish his/her individual goal, the other team members are hindered from pursuing their respective goals. Additionally, means interdependence will present a conflict of interest for individuals as they will be required to rely on fellow team members who may hinder them from accomplishing individual goals. In this situation, individuals will have high willingness to have a thorough, substantial and accurate understanding of the task (i.e., high epistemic motivation) as they are more attuned to focusing on individual goals, and extensive and thorough comprehension of the decision will help them accomplish that goal. These team members will have a high proself motivation as they are focused with only individual outcomes and low prosocial motivation as group outcomes or fairness are not their primary concerns. This proself tendency will discourage team members from sharing information or lead to will “spinning information” (De Dreu et al., 2008) in order to promote personal goals. Further, high proself motivation will also incite individuals to be less cooperative and engage in fewer teamwork behaviors despite having means interdependence (Johnson et al., 2006). This will have negative consequence on the team performance with means interdependence in which members are required to depend on each other for accomplishing tasks.

In a cooperative team structure requiring means interdependence, team members share the perception of joint destiny which incites sharing of knowledge and information extensively. As members do in fact share a common goal, the motion of an individual member toward a goal facilitates the motion of other members reaching their goals. Therefore, in a cooperative reward structure with means interdependence, team members will be willing to have a thorough, substantial and precise comprehension of group task (i.e., high epistemic motivation) as it can enable them to accomplish the shared goals with individuals on which they are dependent, eliciting mutual benefits. In addition, in a cooperative team structure with means interdependence, the team members will also be more concerned with joint outcomes (i.e., prosocial motivation) due to the shared reward offered. I.e., team members will be willing to share information that is more accurate and pertinent to group decision making. Nevertheless, cooperative structures also have some possible drawbacks (Latane & Nida, 1981), e.g., such reward structures diminish personal responsibility and generate expendable contributions which may incite individuals to hold back their efforts (i.e., social loafing) (Karau & Williams, 1993). Therefore, social loafing may negatively impact team performance to some extent, as
team members would need to rely on those who may withhold effort due to lack of accountability.

In a hybrid reward structure incorporating means interdependence, individuals are encouraged to pursue both individual and team goals as both individual and team efforts are rewarded. As suggested by extant literature, hybrid reward structure can diminish the possibility of social loafing as members have the desire to pursue individual rewards (Pearsall et al., 2010). Further, individuals are less likely to withdraw information or “spin” information since that would hinder the team from accomplishing shared goal in order to receive the team reward. Therefore, hybrid reward structures enhance epistemic motivation as members would like to have a thorough and substantial understanding of the task and decision problem (i.e., high epistemic motivation) to facilitate the accomplishment of shared goals (i.e., team reward) and prosocial motivation. Members in such reward structures are likely to process information thoroughly and share accurate and pertinent information with the team in order to facilitate both individual and shared reward accomplishments. This reward structure increases both pro-self and prosocial motivation as team members are concerned about both individual and team rewards. Team members are expected to share their experiences, knowledge, and experiences during their interactions with fellow team members in such conditions, which is further facilitated by means interdependence, thereby, enhancing team performance.

**Proposition 1:** Hybrid reward structure will result in higher epistemic and prosocial motivation in teams, leading to better individual and team performance than (a) competitive and (b) cooperative reward structure.

**Need for affiliation.** Need for affiliation is a personality attribute which refers to individual’s aspiration for social contact or belongingness (Veroff & Veroff, 1980), and is linked with inclinations to receive social fulfillment from harmonious relationships and a feeling of togetherness with others (Murray, 1938). On the other hand, individuals with low need for affiliation will have less intrinsic desire to belong and are likely to perceive themselves as independent from others (Wiesenfeld, Raghuram & Garud, 2001). Students with a high need for affiliation motive prefer to participate in activities that allow them to work with others (Jackson, 1974; McClelland, 1965). In a hybrid reward structure with means interdependence, team members with higher need for affiliation are expected to engage in more information sharing as it can enable them to build trust with other members and maintain harmony in the group. Means interdependence requires efficient interactions and communication which can be facilitated by individual’s desire to maintain harmony elicited by need for affiliation. In order to maintain group harmony, these members may have the innate desire to have a thorough understanding of the task and decision problem (i.e., high epistemic motivation), as they can contribute to the team if they have a good comprehension of the task. Members with high need for affiliation will also likely have prosocial motivation and less proself motivation, as consideration of team outcomes as opposed to individual outcomes will be important for team members who would seek team belongingness. Therefore, need for affiliation will strengthen the positive relationship between hybrid reward structure and both epistemic and pro-social motivation.

In a competitive reward structure, individuals will have the motivation to pursue individual goals. Nevertheless, for individuals with high need for affiliation, the need to seek belongingness would diminish the pursuit of individual goals and would enhance individuals’ epistemic motivation toward shared task and reduce proself motivation. A thorough understanding and information processing of the task (i.e., high epistemic motivation) will satisfy their need for belongingness. Further, need for belongingness and maintenance of harmony will incite these individuals to be less concerned about individual outcomes (i.e., proself motivation). Therefore, the positive relationship between competitive reward structure and epistemic motivation will be enhanced by need for affiliation whereas the positive relationship between competitive reward structure and prosocial motivation will be weakened by high need for affiliation.

**Proposition 2:** Need for affiliation will moderate the positive relationship between hybrid reward structure and i) epistemic motivation and ii) prosocial motivation in teams such that the relationships will be stronger when need for affiliation is higher.

**Proposition 3:** Need for affiliation will moderate the positive relationship between competitive reward structure and i) epistemic motivation and ii) prosocial motivation such that the relationship with epistemic motivation
will be stronger and the relationship with proself motivation will be weaker when need for affiliation is higher.

Discussion

The purpose of this paper is to demonstrate how different types of reward structures (i.e., cooperative, competitive and hybrid) have influence on team performance due to motivated information processing. Explaining the mechanisms can shed a light on the process incited by these reward structures. Additionally, this paper also incorporated individual differences as boundary conditions (i.e., need for affiliation). Goal interdependence theory argued that means interdependence affects the extent to which members have to depend on fellow team members which inevitably influence team performance. For this reason, means interdependence is incorporated in this research. In a cooperative reward structure, the conception of shared goals incites individuals to engage in interactions in order to accomplish their shared outcomes. Nevertheless, equal reward distribution and individual effort dispensability may reduce accountability of individual members which can induce social loafing. In a competitive reward structure, the provision of solely individual rewards incites individuals to have proself motivations. In such conditions, individuals are more attuned to enhancing personal gains as opposed to focusing on team outcomes. To thwart the detrimental effects of competitive and cooperative reward structures, we can incorporate a hybrid reward structure which compensates both individual and team effort. This type of reward structure may incite individuals to expend more effort to accomplish individual goals (e.g., spend more time understanding the task) and team goals (e.g., share information with the team). Based on motivated information processing in groups (MI-G) model, this study discusses about the two types of motivation processes (epistemic and social motivations) that can be induced by distinctive reward structures. In a competitive reward structure entailing means interdependence, individual members will have tendencies to focus on individual as opposed to shared goals. As a result, members will be less motivated to have a thorough and substantial comprehension of the group task (i.e., low epistemic motivation) and be less concerned about team outcomes (i.e., low prosocial motivation). Consequently, low levels of these two motivations will negatively impact team performance. In a cooperative reward structure with means interdependence, members will be incited to have a thorough understanding of the task (i.e., high epistemic motivation) as doing so would enable them to work effectively toward shared goals. Need for affiliation refers to individual’s aspiration for social contact or belongingness. This individual difference factor will incite individuals to have high epistemic motivation and high prosocial motivation. Individuals who are high on need for affiliation derive a sense of pleasure from belongingness, therefore, they are more likely to be concerned about team outcomes (i.e., high prosocial motivation).

Future researchers may replicate this study by using participants from organizations, in order to have results that will be more generalizable. Future researchers can examine the effect of reward structures on motivational processes for teams with long tenure as members’ experiences of working with fellow team members may have alternate implications. One of the strengths include the multi-source measurement of the study variables which can reduce common method bias of the findings (Podsakoff, MacKenzie, Lee & Podsakoff, 2003). In this paper, the motivational process is considered to be static, future researchers can examine how the motivational process of team members change over time. Despite some of the shortcomings, I hope this paper can contribute to the literature of reward structures and MI-G model. The presence of groups and teams is prevalent in modern day organizations; therefore, a thorough understanding of individuals’ and teams’ motivational processes and performance based on various types of reward structures will be beneficial for both scholars and practitioners.

References


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