



Team-based reward allocation structures and the helping behaviors of outcome-interdependent team members

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Abstract

Purpose – The purpose of this paper is to examine the effects of two key team-based pay characteristics – namely reward allocation procedures (i.e. reward based on norms of equity, equality or some combination of the two) and incentive intensity – on both the amount and type of help given to one another among members of outcome-interdependent teams.

Design/methodology/approach – A total of 180 undergraduate students participate in a laboratory simulation with a 2×3 experimental design. Servicing virtual “clients,” participants receive pre-scripted requests for assistance from anonymous teammates. ANOVA and hierarchical regression analyses are used to test the hypotheses.

Findings – Relative to equity-oriented group-based pay structures, equality-oriented pay structures are found to be associated with both significantly more help giving in general and more of the type of help likely to enhance group-level competencies (i.e. autonomous help). Incentive intensity strengthens the effects of reward allocation on the amount (but not the type) of help giving.

Research limitations/implications – While the short time frame of the simulation poses a significant threat to external validity, the findings suggest that team-based compensation practices may provide organizational leaders with an important tool by which to shape critical, helping-related team processes, with potentially important implications for both team learning and performance.

Practical implications – Managers interested in promoting capacity-building and helping among team members should avoid allocating team rewards strictly on the basis of the individual contribution.

Originality/value – This paper provides the first empirical findings regarding how alternative modes of team-based reward distribution may influence key group processes among members of outcome interdependent teams.

Keywords Team working, Pay, Performance related pay, Incentives (psychology)

Paper type Research paper



With the increasing emphasis on team-based work (Cohen and Bailey, 1997; Kozlowski and Bell, 2003), researchers (Kerrin and Oliver, 2002; Lawler *et al.*, 1995) have documented a growing interest in group-based compensation, or “pay systems in which group members’ pay is at least partially contingent on measurable group performance” (DeMatteo *et al.*, 1998, p. 142). Underlying this interest is the belief that such pay systems are likely to enhance members’ pro-social behaviors and as a result, boost members’ capabilities, flexibility, responsiveness, and productivity (Wageman, 1995; Haines and Tagger, 2006). Building on Deutch’s (1949) seminal research on cooperation in small groups, numerous studies have demonstrated a link between the degree to which rewards are contingent upon group performance (i.e. outcome interdependence) and the level of cooperation among individual group members (Shea and Guzzo, 1989; Wageman, 1995), particularly under conditions of more intensive task interdependence (Cotton and Cook, 1982; Mesch *et al.*, 1988). Practitioner reports also suggest a potentially strong link between team-based incentives and team effectiveness (Parker *et al.*, 2000).

Despite the advances in the research noted above, DeMatteo *et al.* (1998, p. 142) conclude from their review of the literature that the research to date provides little specific guidance for designing rewards in group-based work environments, and highlight several areas in which there remain significant gaps in our understanding. The first of these has to do with the mode of team reward distribution or, in other words, the extent to which group-based rewards should be allocated on the basis of equality, with all members getting an identical incentive pay out, as opposed to equity, with members receiving an incentive proportionate to their individual contribution. Researchers (Wageman, 1995) have widely explored the implications of outcome or goal interdependence for cooperation and performance by comparing the consequences of discretionary pay contingent strictly upon individual performance (i.e. no consideration of group performance whatsoever), with those of discretionary pay contingent strictly upon group performance (i.e. no consideration of individual performance whatsoever). However, the impact of variance in the way in which group-based rewards are distributed among members of outcome interdependent teams has been largely neglected in the research to date (DeMatteo *et al.*, 1998, p. 152). The question of whether such rewards should be distributed on the basis of equality as opposed to equity is likely to be no trivial matter. This is because, as we describe below, the assumed monotonic effects of the degree of outcome interdependence on cooperation-oriented behaviors may not necessarily apply among those who, by virtue of the outcome interdependence inherent in any group-based reward, may already identify with the collective interests of their work unit (Milgrom and Roberts, 1992).

Second, DeMatteo *et al.* (1998) suggest that the literature on group-based pay has been limited by an overwhelming emphasis on the impact of such systems on performance and effectiveness. They claim that in order to understand how group-based pay influences team performance, researchers need to pay greater attention to those individual-level, behavioral and cognitive factors which, while significant in their own right, are also likely to explain any effect of group-based pay on group performance. Helping, a pro-social behavior which involves acts of consideration and cooperation (Dyne and LePine, 1998), serves as one such factor (Bachrach *et al.*, 2006; van der Vegt *et al.*, 2006). Indeed, as noted by van der Vegt and van de Vliert (2005, p. 85), “helping behavior can be extremely valuable for the success of work teams”. Although pro-social

behaviors such as helping have been examined as dependent variables in a number of pay-related studies (Deckop *et al.*, 1999; Wright *et al.*, 1993; Wageman and Baker, 1997), the research on group-based pay and helping remains limited in two important respects. First, while researchers have examined the helping-related implications of group-based pay in general, we are unaware of any study examining the helping-related implications of alternative modes of group-based reward allocation. Second, those researchers that have examined the link between pay and helping have focused almost entirely on the impact of pay structure on the level or amount of assistance provided by members to one another regarding an organizationally relevant task or problem. As such, they have largely neglected the possible impact that group-based pay structures might have on the nature of such helping, or the degree to which such assistance is aimed at solving the recipient's immediate problem as opposed to enhancing the recipient's competencies for the longer-term. Given the impact of team learning (West, 2000) and absorptive capacity (Cohen and Levinthal, 1990; Huber, 1999) on team performance (Ellis, 2006), the performance implications of group-based pay may have as much to do with the type of help members provide to one another (i.e. degree to which such help is capacity-building in nature) as with the amount. As noted by van der Veegt *et al.* (2006, p. 878), in teams characterized by members with varying competencies, "it is a common aspiration [. . .] to increase the overall expertness of the team through the more expert members helping the less expert members".

Finally, a third gap suggested by DeMatteo *et al.* (1998) concerns the possible conditioning effects of incentive intensity on this link between the structure of group-based pay and helping. Incentive intensity, or the overall magnitude of the incentive as a proportion of total pay (Zenger and Marshall, 2000), may be significant in that different modes of group-based reward allocation may have more or less of an impact on member helping depending upon the extent to which team members view the collective reward as being salient enough to compensate for any decline in the marginal individual benefit or any gain in the pecuniary costs of helping fellow group members. This suggests that the mode of team-based reward distribution is likely to have little impact on how team members allocate their cognitive and attentional resources (i.e. on helping others as opposed to boosting their own performance) if such rewards account for, at most, only a small proportion of total pay. However, it also suggests that in those contexts in which team-based rewards comprise a larger proportion of total pay, the effects of reward distribution on members' resource allocation (and hence the degree to which they engage in helping) are likely to be significantly amplified.

This paper seeks to address all three of these gaps in the extant literature by generating and testing hypotheses regarding the direct and intensity-moderated effects of group-based pay allocation mode on both the overall amount of help team members provide to one another, as well as on the type of help members provide to one another, and more specifically, on the degree to which such help is capacity-building in nature. Grounding our framework upon the principles of cognitive choice (Kanfer and Ackerman, 1989; Kanfer, 1990), we extend existing theory regarding the performance implications of team-based rewards (Wageman, 1995), by proposing that how such rewards are distributed has important effects on the degree to which members' cognitive and attentional resources are allocated towards helping behaviors; behaviors consistently shown to have key performance implications for work teams. Because our

concern is with the impact of alternative modes of allocating group-based rewards on helping behavior within teams (and not on group performance), the individual group member serves as our unit of analysis. In addition, recognizing the disparity in help givers' and receivers' definition and evaluation of helping (Flynn, 2006), in the current study we adopt the episodic approach suggested by Flynn (2006, p. 165). Thus, rather than focusing on others' perception of an individual's overall organizational citizenship behavior, we focus on individuals' behavioral responses to the specific help requests of their teammates.

Theory development

Although, most of the organizational research on employee helping has focused on the amount of helping peers provide to one another, the helping literature suggests that the extent to which members' helping behaviors are likely to contribute to overall team performance is also likely to vary as a function of the type of help actually provided. Specifically, the helping literature (Nadler, 1997, 1998) suggests that requests for assistance can be distinguished on the basis of the degree to which the help-seeker's primary objective is competency-development (autonomous help-seeking) as opposed to immediate problem resolution (dependent help-seeking). Consequently, whenever members are asked to give help to a colleague, they must not only decide whether to provide assistance, they must also choose between providing help aimed at solving the colleague's immediate problem without regard to the provision of competencies required to solve similar problems in the future (referred to as dependent help-giving), as opposed to assistance aimed at helping the colleague solve the immediate problem and others like it in an independent and efficient manner in the future (referred to as autonomous help-giving). Consistent with cognitive choice notions of motivation (Kanfer, 1990), we propose that the manner in which team-based pay is allocated is likely to affect both decisions.

Reward allocation and the amount of help-giving

Underlying the cognitive choice perspective on motivation (Naylor *et al.*, 1980; Kanfer and Ackerman, 1989; Milgrom and Roberts, 1992) is the notion that, because team members' personal resources are limited, reward allocation procedures are likely to have a direct effect on the direction of members' individual attention and effort. Simply put, according to this perspective, individuals direct cognitive and attentional resources towards those behaviors perceived to be associated with the highest degree of subjective expected utility or more positive product utility functions. Within the rubric of cognitive choice, a number of motivation theories suggest that team members will attribute a greater degree of utility to pro-social behaviors under conditions of equality-based (as opposed to equity-based) reward allocation, and thus, that members will be more likely to accede to colleagues' requests for assistance under conditions of equality-based allocation relative to equity-based allocation. In particular, since the instrumentality of one's assistance is often beyond an individual's direct control, consistent with both expectancy (Vroom, 1964) and informativeness (Milgrom and Roberts, 1992, p. 219) notions, members of outcome-interdependent teams are likely to attribute a greater degree of uncertainty to the net benefit of expending resources on helping others relative to that associated with resources directed towards their own individual goal accomplishment. Consequently, while time and effort expended on

helping others accomplish their team-related tasks may increase the overall size of the bonus to be divided among all members of the team, whether team members view such assistance as likely to enhance their own personal utility is likely to be influenced by how such a team-based bonus is allocated. If that bonus is allocated on the basis of equality principles, personal rewards are less likely to be adversely affected by lower levels of direct, personal task accomplishment, thus resulting in a more positive product utility function for helping. If, however, that bonus is allocated on the basis of equity principles, the uncertainty surrounding the instrumentality of such assistance, combined with the fact that resources allocated to helping others cannot be expended on individual goal accomplishment, is likely to generate a more negative product utility function. In this case, it is likely that attentional and cognitive resources will be directed away from helping others and redirected towards one's own personal task accomplishment.

Consistent with such theorizing, the results of several recent studies (Deckop *et al.*, 1999; Wright *et al.*, 1993) suggest that individuals indeed reduce the amount of resources expended on pro-social behaviors (e.g. helping) in favor of in-role task-oriented behaviors when, as in the case of the equity-based group reward allocation, one's group-based payout is more contingent upon the successful completion of individual task objectives. Consequently, when comparing equity-based group reward allocation to:

- mixed equality and equity-based reward allocation (i.e. half of the team reward allocated equally, and the other half allocated on the basis of individual contribution); or
- equality-based group reward allocation, we posit that:

H1. The greater the extent to which team-based pay is allocated on the basis of norms of equity as opposed to norms of equality, the fewer the number of teammate help requests to which team members accede.

Reward allocation and type of help-giving

Team members wishing to accede to the help requests of their teammates must implicitly make a decision as to whether to provide dependent or autonomous (i.e. capacity-building) assistance. We propose that cognitive choice notions of expected utility will govern such decisions as well. To the extent that members identify with the team and have some internalized interest in building or at least conserving team resources, members may be inherently motivated to provide autonomous help even when dependent help is requested. Team members may also prefer offering autonomous help in order to make the recipient more independent, thereby reducing the risk of facing requests for similar forms of assistance from this same teammate in the future and, as a result, experiencing further personal resource depletion.

On the other hand, power-dependence theory (Bacharach and Lawler, 1981, 1987) suggests that any such tendency of help-givers to provide autonomous over dependent help assumes a higher level of naivety on the part of the help-giver than may truly exist. According to this theory, despite the potentially negative, long-term implications of dependent help-giving for the team as a whole, for the individual help-giver dependent help may be more beneficial in that such help is more likely to increase the help-seekers' dependence on the help-giver, thus enhancing the help-giver's influence over the help-seeker and increasing their ability to recoup expended resources in the future.

Behavioral economics also suggests that members of teams may generally be motivated to provide dependent over autonomous assistance as a result of behavioral myopia, with individuals tending to overweight the shorter-term and hence, subjectively less uncertain consequences of their decisions as opposed to the longer-term and subjectively more uncertain consequences (Thaler *et al.*, 1997; Wiseman *et al.*, 2000). As noted above, at least in the short-term, autonomous assistance often demands greater resource utilization on the part of the help provider than dependent assistance since it often take less time and energy to provide an immediate solution to a problem than it does to teach one's teammate how to do so independently. In addition, despite the fact that it is likely to be in the long-term self-interest of the recipient to receive autonomous help, melioration notions in behavioral economics suggest that individuals tend to overweight the utility of alternatives that produce better immediate performance and to underweight those offering superior but delayed performance (Herrnstein *et al.*, 1993; Herrnstein and Prelec, 1991), and therefore that help recipients may generally be expected to prefer and request an immediate solution to their problem. As a result, there may be significant short-term social costs to the help-provider for going against the wishes of the help-seeker by offering autonomous help. For example, help-providers under pressure by the recipient to provide immediate dependent help may be concerned that the provision of autonomous assistance might have an adverse effect on social relations.

Team reward allocation practices may influence the degree to which members of teams emphasize the advantages of one mode of help giving over another, and consequently expend personal resources in providing one type of help over the other. Specifically, to the degree that rewards are allocated on the basis of equity norms, or in other words, on the basis of individual performance outcomes, team members are likely to be motivated to provide dependent as opposed to autonomous help. Dependent help giving is more likely under such conditions in that in the immediate term, such help-giving tends to require the expenditure of fewer personal resources (e.g. energy, time), permitting the help-giver to receive any social or influence-related benefits of help-giving with lower pecuniary costs (i.e. smaller net decline in the resources available for allocation to personal goal attainment to which direct extrinsic rewards are attached).

In contrast, under conditions of equality-based reward allocation, individuals are likely to be motivated to provide a greater proportion of assistance in the form of autonomous help. From a loss perspective, members of teams receiving team-based rewards allocated on the basis of equality norms are likely to be relatively indifferent as to expending helping resources on dependent or autonomous help since, with no direct extrinsic reward attached to individual goal attainment or performance, help-giving is relatively cost-free. That is, because resources expended on help giving are simply "deducted" from those that might otherwise have been allocated to personal goal attainment or performance, there is no greater negative utility necessarily associated with expending personal resources on one type of helping over the other. However, from a gain perspective, members receiving team-based rewards allocated on the basis of equality norms may have a definite preference for expending resources on autonomous over dependent help since the former, by potentially enhancing team capabilities (and hence overall team performance and the magnitude of the team reward associated with it) may offer a greater potential for resource gain (i.e. greater

positive utility). With this in mind, comparing equality-based modes of team reward allocation with:

- equity-based; and
- mixed equality and equity-based modes of team reward allocation, we posit.

- H2. The greater the extent to which team-based pay is allocated on the basis of norms of equality as opposed to norms of equity, the greater the relative prevalence of autonomous help-giving.

Moderating effects of incentive intensity

Up to now we have focused largely on how the mode of team-based reward allocation influences the extent to which team members direct their cognitive and attentional resources towards helping (as opposed to personal task accomplishment), as well as, the form of helping towards which they direct their resources. However, consistent with cognitive choice theories of motivation, the strength of such an effect is likely to depend upon the perceived instrumentality of directing resources towards one activity as opposed to another (Naylor *et al.*, 1980). This is because underlying cognitive choice theories of motivation is the notion that the greater the degree to which pay is contingent upon a given outcome (i.e. the greater the perceived instrumentality of that outcome) the greater the employee's interest in and commitment to exerting effort and maximizing performance along that measured outcome (Vroom, 1964; Naylor *et al.*, 1980; Kanfer and Ackerman, 1989). Accordingly, even if team-based rewards are allocated on the basis of equity principles, the subjective expected utility of directing personal resources away from helping and towards individual task accomplishment is likely to be higher to the extent that the individual perceives pay as being say 20 percent fixed (i.e. contingent upon participation) and 80 percent variable (i.e. contingent upon performance) relative to the situation in which pay is perceived as being largely fixed (i.e. 80 percent contingent upon participation), and 20 percent variable (contingent upon performance).

As noted earlier, incentive intensity has to do precisely with the proportion of pay that, rather than being certain or fixed, is variable or – as in most organizational contexts – contingent on the level of performance. To the degree that higher levels of incentive intensity imply steeper performance-pay slopes or stronger instrumentalities, they are likely to increase the saliency of the measured outcomes along which the individual's reward is contingent (Milgrom and Roberts, 1992), and thus amplify the effects of team reward allocation mode on helping noted above. Accordingly, we would expect that for those whose team-based reward is allocated on the basis of equity principles, the perceived instrumentality of allocating attentional and cognitive resources towards personal task accomplishment (and away from helping, and in particular, autonomous helping) is likely to be greater as incentive intensity increases. Similarly, we would expect that for those whose team-based reward is allocated on the basis of equality principles, the perceived instrumentality of allocating attentional and cognitive resources towards helping (and away from personal task accomplishment) is likely to be greater as incentive intensity increases. Accordingly, higher levels of incentive intensity are likely to amplify the inverse relationship between the degree to which performance-based pay is based on equity (as opposed to equality) norms and

the proportion of help requests to which interdependent team members accede. This same logic suggests that the impact of reward allocation procedures (i.e. equity versus equality) on the proportion of autonomous (as opposed to dependent) help provided will also increase as a function of incentive intensity. Consequently, as displayed in Figure 1, we hypothesize:

- H3a.* Incentive intensity moderates the link between reward allocation procedures (i.e. the extent to which team-based pay is based on norms of equity as opposed to norms of equality) and the proportion of teammate help requests to which working team members will accede. The inverse association between the degree to which team pay is based on norms of equity (as opposed to equality) and the proportion of help requests acceded to is stronger under conditions of higher incentive intensity than under conditions of lower incentive intensity.
- H3b.* Incentive intensity moderates the link between reward allocation procedures (i.e. the extent to which team-based pay is based on norms of equity as opposed to norms of equality) and the relative prevalence of autonomous (as opposed to dependent) help-giving. The positive association between the degree to which team pay is based on norms of equality (as opposed to equity) and the relative prevalence of autonomous (as opposed to dependent) help-giving is stronger under conditions of higher incentive intensity than under conditions of lower incentive intensity.

Method

The hypotheses noted above were tested using a computer-based team simulation on the basis of a 3 × 2 experimental design, with participants assigned to one of six conditions varying in terms of both reward allocation procedure (equity, equality, and mixed) and incentive intensity (i.e. low versus high). We opted for a simulation-based experiment for two reasons. First, this approach allowed us to better assess the causal impact of team reward allocation structure on member helping while controlling for extraneous sources of variance in helping (e.g. interpersonal dynamics). Second, because there is limited within-firm variance in the way in which

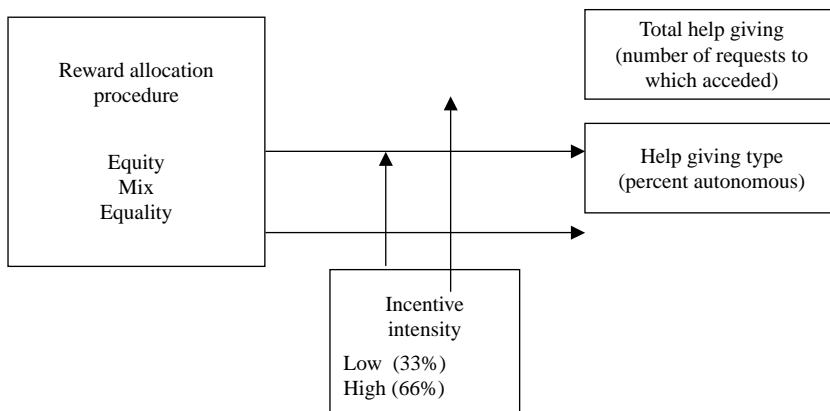


Figure 1.
Proposed model

team-based rewards are allocated among team-members, any field-based, cross-sectional design would have required the collection of pay and helping data from members of teams nested within multiple organizations.

Five simulated outcome-interdependent teams each with an average of six participants per team, were assigned to each condition ($n = 180$). Although team members were able to freely exchange information and assist one another, such exchange and assistance (i.e. task interdependence) was not a formally prescribed element of their position or role. Nevertheless, as we describe in more detail below, team members' rewards were at least partially contingent on collective performance, the defining condition for outcome interdependence (van der Vegt and van de Vliert, 2005; Wageman, 1995). Such outcome-based interdependency frameworks are characteristic of teams in a wide variety of work contexts, such as sales teams (whose members, while collectively responsible for the promotion of a particular brand, are individually assigned to specific market segments), and call center teams (whose members, while individually handling specific customers, are still collectively responsible for providing a particular type of support service). Indeed, a customer contact (call) center simulation was adopted as the basis for the experiment in order to maximize the external validity of our findings.

To limit the potential confounding effects of interpersonal dynamics on helping, team members' actual interactions were limited to the pre-session briefing and post-session debriefing. All experimental interactions were strictly virtual and simulated in that all teammate help requests received by participants were actually pre-programmed and computer-generated at a pre-set pace. Similarly, responses to participant requests for help from teammates were also computer-generated and provided at a consistent, pre-set pace across conditions. As such, at no time following the initial introduction to the experiment did participants actually interact with their teammates.

Participants

The 180 study participants were all first-degree students enrolled in a behavioral science course at a large research university in Israel. Participation was voluntary and each student was paid 20-30 NIS and received two extra points toward their grade in the course for participating in the research. We believe that this level of compensation was meaningful to the student participants in that:

- the average student wage in Israel is approximately 20 NIS/h;
- other experiments at the university pay no more than NIS 20/h;
- students participating in the current study had to commit to no more than 60 minutes of their time; and
- the experiment was over-subscribed.

Average age was 24.8 years and 46.1 percent of participants were women. Although students were randomly assigned to their team (and hence, condition), on average, participants had 1.7 friends in their team. Although participants were debriefed upon the completion of the simulation, going into the experiment, participants were unaware of the research hypotheses and were told simply that they would be participating in a study of employee satisfaction using a simulated team-based, online customer contact (i.e. call) center.

In order to minimize the risk of cross-condition contamination, as part of the consent process, participants had to sign an agreement in which they agreed not to disclose any element of the experiment to anyone else without the written permission of the investigators. In addition, the experiment was conducted intensively over the course of four days during an exam period, thus limiting students' opportunities to discuss their experiences with one another.

Procedure, manipulation and support center simulation

After providing initial consent, all team-members sat together for a 10-minutes, initial training session. During this session, they were informed that they would be engaged in a customer service simulation, and that as customer service agents, their job would be to service virtual customers subscribing to an online leisure services company providing information and recommendations with respect to restaurants, entertainment, hotels, etc. . . . They were also told that each agent would be seated at their own workstation with solid wall dividers providing a bit of privacy but also making it difficult for teammates to communicate with one another other than by means of the virtual, online communication system built into the simulation. Participants were told that since agents tended to work better in a quiet environment they should refrain from talking to one another during the experiment and use the virtual system instead.

Manipulation

The experimental manipulation was structured around three alternative team-based reward allocation structures (i.e. equality, equity or a combination of the two), and two alternative reward contingencies (low versus high intensity). The experimental manipulation began with a common training session for all study participants, regardless of the condition to which they were assigned.

As part of their initial training, all participants were told that the primary objective of their team was to "provide a high quality of responsive service so as to enhance customers' overall level of satisfaction, with quality service involving the provision of accurate information in a polite manner". The experimenter also reviewed a written statement posted on the wall of each member's workstation. According to this statement, participants learned that:

- Performance would be measured as an equally weighted function of both the number of customer queries answered and the quality of service provided.
- Past experience indicates that the more familiar members are with issues of concern to customers, the better their performance.
- In addition to their base pay for participating in the experiment, they might receive additional pay contingent upon their team's overall level of performance.
- Team members had to determine for themselves how they wished to work, and in particular, the extent to which they would work together or independently in order to provide the best service to their clients.
- They would receive their compensation upon the conclusion of the simulation.

Then, depending upon the particular condition to which the team was assigned, participants were instructed as to how any team-based reward would be allocated among team members. The 60 participants assigned to the equity reward allocation

procedure condition were told that any team-based reward would be divided up among the team members entirely on the basis of personal performance measured in terms of the number and quality of responses to customer queries personally made by each team member in the 30-minutes simulation. It was explained to them that those providing better quality service and/or service to a greater number of customers in the allotted time could expect to receive a larger portion of any team-based bonus than their teammates providing lower quality service and/or responding to fewer customers. The 62 participants assigned to the equality reward allocation procedure condition were told that that any team-based bonus reward would be equally divided among all team members. Finally, the 58 participants assigned to the mixed reward allocation procedure condition were told that half of any team-based reward would be determined on the basis of personal performance (i.e. number of customer queries handled and quality of service), and the other half divided equally among the team's members.

In addition, the 91 participants (30 each in the equity and mixed conditions and 31 in the equality condition) in teams assigned to the low incentive intensity condition were instructed that they would receive base pay of 20 NIS and up to ten NIS additional pay (i.e. 33 percent incentive intensity) based on their individual, team, or combined individual and team performance (depending on the assigned condition). The 89 participants (30 in the equity condition, 28 in the mixed condition, and 31 in the equality condition) in teams assigned to the high incentive intensity condition were told that they would receive base pay of ten NIS and up to 20 NIS additional pay (i.e. 66 percent incentive intensity) based on their individual, team, or combined individual and team performance (depending on the assigned condition). In both cases, participants were told that "overall, the more inquiries responded to and the higher the quality of performance by you and your teammates, the more pay you will take home at the end of the experiment".

Manipulation checks

In order to ensure the robustness of our experimental manipulations, we ran two manipulation checks. Our first manipulation check sought to ensure that, particularly among those in the equity condition, participants felt that they were members of outcome-interdependent teams. To do so, participants ($n = 30$ students) were read two alternative versions of the introductory statement described above. In the control condition ($n = 15$), participants were read all statements above with the exception of statement 3 (regarding outcome interdependence). In the experimental condition, participants were read all five statements (including statement 3 suggesting outcome interdependence), and were also informed that any team-based reward would be allocated on the basis of equity norms (i.e. divided up entirely on the basis of personal performance as noted above). Participants were then asked to complete a brief three-item instrument based on the measures used by Wageman (1995) assessing perceived outcome interdependence (sample item: "in this organization, team members either all sink or all swim together;" 1 = completely disagree versus 5 = completely agree) (Cronbach $\alpha = 0.76$). Mean scores were 5.0 (SD = 0.99) and 4.1 (SD = 1.07) ($t = 2.09$, $p < 0.05$) for the experimental and control conditions, respectively, suggesting that the inclusion of the two interdependence statements in our study was effective in priming participants' perceptions of outcome-interdependence even under conditions of equity-based team rewards. A second manipulation check,

aimed at assessing the degree to which participants' internalized differences in reward allocation and incentive intensity, was run on the basis of data collected by means of a questionnaire completed at the end of the simulation. In both cases, participants indicated their degree of agreement with statements regarding the nature of compensation used in the simulation using a scale ranging from 1 (completely disagree) to 7 (completely agree). Three items tapped each of three different approaches to reward allocation (i.e. "compensation in this simulation is based partially on base pay, and partially on pay that is contingent upon only personal performance/only team performance/a combination of team and individual performance") (Cronbach $\alpha = 0.70$). ANOVA results indicated significant differences in the expected directions between participants in teams assigned to equity, equality and mixed reward allocation conditions ($F_{2,177} = 21.33, p < 0.001$; $F_{2,177} = 12.34, p < 0.001$; $F_{2,177} = 10.53, p < 0.001$), respectively. An additional two items tapped incentive intensity (sample item: "compensation in this simulation is determined only to a small extent by base pay, with most of the reward being a function of performance"; Cronbach $\alpha = 0.86$). *t*-test results indicated significant differences between participants in teams assigned to the two alternative incentive intensity conditions with respect to their perceptions of incentive intensity as being low ($t = 3.59, p < 0.01$).

Simulation

As noted earlier, in order to enhance the study's external validity, the experiment was built around a highly realistic, e-mail based, customer contact center simulation. As service agents, participants were informed that they would be responsible for responding to customer requests for leisure-related information by means of online messages. Participants were told that in addition to the ten minutes of general training received (enabling them to answer queries regarding a wide range of leisure-related customer inquiries), each team-member would also receive an additional five to ten minutes of personalized, hands-on training in a particular leisure domain (e.g. restaurants, hotels, entertainment), allowing them to serve as "expert" referents to their teammates in those cases in which customer requests were more complex or demanding, or simply out of their teammate's domain of expertise. Participants were informed that teammates requiring help from their peers could simply press a "help" button on their screen, and the problematic customer inquiry would be automatically channeled to that team member with the appropriate training (with the help-seeking team-member still retaining ultimate responsibility for assisting the customer). Thus, participants received ten minutes of general training (seeing how customer queries were received and could be responded to using common search engines such as "Google," and learning how they could submit requests for help to their teammate "experts" as well as respond to requests sent by their teammates to them as experts), followed by an additional ten minutes of hands-on training at their workstation in their assigned area of expertise.

In fact, all participants were assigned the same area of expertise (i.e. restaurants) and all participants received the same set of pre-programmed, customer queries and team-member help-requests randomly generated and sent to participants by the computer. Regardless of condition, all "teammate" help-requests were neutral with regard to their dependent versus autonomous nature. Specifically, no identifying information regarding the particular "teammate" seeking help was available since the

computer (the actual source of the help request) only displayed the subject of the forwarded customer request and its status (e.g. “waiting”). Regardless of condition, both customer queries and teammate requests for help were sent to participants at a constant rate, thus eliminating any confounding effects of the number of customer inquiries or teammate help requests received.

In order to respond to the computer-generated teammate help requests, participants selected one or more help-giving options from a help-giving template. These options were designed to reflect three help giving behaviors:

- (1) *Denial*. Although all participants were warned that due to high call volume, it was unlikely that they would have more time to respond later on in the simulation, they could opt to postpone help (i.e. “Sorry. Maybe later”), or deny it outright (i.e. “Sorry. I can’t help you.”). Both denial options were automatically blocked from selection if participants selected any of the remaining options on the screen (thereby actually providing assistance).
- (2) *Dependent help-giving*. Participants could answer their teammate’s request by providing precisely the information requested (i.e. by cutting and pasting the name of a particular restaurant from a given web site) but without providing any further explanation (i.e. providing no insight as to how such information might be sourced in the future). Alternatively or in addition, they could provide the address (i.e. URL) of the web site containing information pertaining to the particular teammate request (e.g. web site of restaurant reviews for a given city) without any further explanation or instruction as to where in this URL the specific answer might be found.
- (3) *Autonomous help-giving*. Regardless of whether they provided the specific information requested by the help-seeker or not, participants providing the web address (i.e. URL) of the web site containing the answer as well as instructions necessary for finding the needed information within the web page, or alternatively, instructions as to how the help-seeker might find an appropriate web site providing him/her with the information needed (in both cases, allowing the virtual teammate to operate more independently in the future) were coded as opting for autonomous help-giving.

With participants asking for teammate assistance on the basis of pre-designed templates for each of the pre-programmed customer inquiries, the computer was able to provide pre-programmed “teammate” responses to all possible help requests. In order to control for the possible confounding effects of reciprocity with respect to the amount and nature of help received, the computer was programmed to respond to 100 percent of participants’ help requests (i.e. no one was ever denied help), and in all conditions, these standardized, computer-driven “teammate” responses to participants’ help requests were randomly generated with approximately half of all responses being dependent in nature and half being autonomous in nature.

At the end of 30 minutes, the experimenter told all participants to stop the simulation task and requested that they complete two short, online questionnaires, the first regarding agent satisfaction, and the second containing manipulation check items. When all team-members completed the questionnaires, the experimenter thanked them for their participation, explained the importance of secrecy regarding the study,

informed all participants as to how they would be paid and receive course credit, and answered participants' questions about the study.

Measures

Two dependent and two independent variables were assessed in this study. Both dependent variables were assessed on the basis of objective, computer-based counts of the number of "peer" requests to which participants acceded. Of the two dependent variables, total (amount of) help given was assessed in terms of the number of "teammate" help requests to which a participant acceded (regardless of the type of help provided). Consequently, the more participants opted to deny or postpone assistance, the lower their score in total help given. Type of help given was assessed on the basis of the proportion of help-responses that were autonomous (as opposed to dependent) in nature (expressed in percentage terms). As noted above, dependent help was operationalized as those responses in which:

- only the particular bit of information requested (and no additional insight into how the help-seeker might access that information on his/her own in the future) was provided; and/or
- the help-giver provided only the web address (i.e. URL) of the web site containing information pertaining to the particular teammate request (e.g. web site of restaurant reviews for a given city) without any further explanation or instruction as to where in this URL the specific answer might be found.

Autonomous help was operationalized as those responses in which (regardless of whether a specific answer was provided or not) the help-giver not only provided the web address (i.e. URL) of the web site containing the answer, but also provided the necessary instructions for finding the appropriate web site and/or needed information within the web page.

Two independent variables, namely the extent to which team-based pay is allocated on the basis of equality (versus equity) norms (i.e. allocation mode) and incentive intensity, were assessed on the basis of the condition to which the individual participant's team was assigned. Allocation mode was therefore operationalized in terms of two dummy variables representing the equality and mixed conditions (with equity serving as the reference). Incentive intensity was operationalized as a dichotomous variable (i.e. 66 percent performance contingency or high intensity versus 33 percent performance contingency or low intensity).

We also sought to control for participants' age, gender, and the number of friends participants had in their "team," given their role as potential determinants of helping-related behaviors (DePaulo *et al.*, 1989; Lee, 1997). Additionally, because those with superior performance capabilities might have felt more able to expend personal resources and provide assistance without any meaningful decline in their own level of individual performance, we also controlled for each participant's individual level of performance (operationalized in terms of the number of customer queries responded to by the participant in the allotted 30 minutes). This allowed us to effectively normalize the level of help giving relative to individual performance.

Analysis

Although the 180 participants were each told that they were members of a given team, in fact, the design of the simulation was such that, other than experiencing the training

together, they had no opportunity to actually interact with their teammates. As such, there was no reason to assume or take into account any random team-level variance, allowing us to analyze the data at the individual level of analysis using a combination of ANOVA and hierarchical regression. Models 1 and 4 included the control variables only. Models 2 and 5 included two dummy variables, each representing an alternative team-level pay condition, namely equality and mixed (with the equity mode as the reference team), as well as incentive intensity as an additional control variable. Models 3 and 6 considered the interaction of incentive intensity with both pay mode dummy variables (i.e. equality and mixed team-based pay).

Results

The means, standard deviations, and intercorrelations of the study variables are displayed in Table I. During the 30-minute simulation, participants' responded to an average of 8.41 customer queries, but only 4.99 requests for assistance from their teammates. Still, across conditions, less than 6 percent of participants ($n = 9$) failed to respond to at least one "teammate" help request, suggesting that despite the virtual nature of the simulation, most participants operated according to some underlying norm of cooperation. In 80 percent of those cases in which help was provided, it was dependent in nature, with the remainder being autonomous in nature. Furthermore, as shown in Table I, there was a strong positive correlation between individual performance (i.e. number of customer queries responded to) and total help giving ($r = 0.37, p < 0.01$), justifying the decision to control for individual performance in assessing the impact of compensation-related variables on help giving. Interestingly, although this correlation may indicate that better performing participants felt that they had more time to focus on performing extra role behavior such as helping their teammates; there was no significant link between individual performance and the proportionate level of autonomous as opposed to dependent help given. In addition, there was no significant bivariate association between the number of friends in the team and either total help given or the relative proportion of help given that was autonomous in nature.

Effects of the mode of reward allocation on amount and type of help

We began our multivariate analysis focusing on the impact of team reward allocation procedures and incentive intensity on the total amount of help given by participants to their simulated teammates. *H1* posited an inverse association between the extent to which team-based pay is allocated on the basis of norms of equity opposed to norms of equality, and the number of teammate help requests to which team members would accede. ANOVA results indicated a significant effect for team-based pay condition when controlling for each of the control variables noted above as well as incentive intensity ($F_{2,172} = 15.64, p < 0.001$), with mean number of help requests acceded to (i.e. total help score) being 3.7 (SD = 2.9), 5.2 (SD = 3.1), and 6.0 (SD = 3.8) for the equity, mixed and equality conditions, respectively. A Tukey comparison indicated that while the differences in the mean levels of helping between those in the equity condition and those in both the equality and mixed conditions were significant ($p < 0.01$ and $p < 0.05$, respectively), the differences between the mean levels of helping for those in the equality and mixed conditions were not. Moreover, consistent with the hypothesis, the regression results presented in Table II, column labeled

Variable	N	Mean	SD	1	2	3	4	5	6	7	8	9	10
1. Age	180	24.76	2.06	-									
2. Gender	180	54%	-	-0.307**	-								
0 = male		46%	-										
1 = female													
3. Number of friends	180	1.70	1.60	-0.006	-0.004	-							
4. Individual performance	180	8.41	3.05	0.045	-0.055	-0.065	-						
5. Equity-based reward allocation	180	33%	-	-0.028	-0.087	0.017	0.172*	-					
6. Mixed-based reward allocation	180	33%	-	-0.022	0.078	-0.061	-0.015	-0.488**	-				
7. Equality-based reward allocation	180	34%	-	0.049	0.010	0.043	-0.156*	0.513**	-0.500**	-			
8. Incentive intensity	180	51%	-	-0.094	0.088	-0.186*	0.151*	0.008	-0.016	0.008	-		
0 = 33%		49%	-										
1 = 66%													
9. Total help giving	180	4.99	3.45	-0.008	-0.086	0.048	0.367**	-0.262**	0.049	0.212**	0.166*	-	
10. Percentage of autonomous beta (versus deoquent)	171	0.20	0.30	0.161*	0.112	-0.027	-0.087	0.330**	0.90	0.227**	0.111	-0.038	-

Notes: * $p < 0.05$; ** $p < 0.01$; two-tailed test

Table I.
Means, standard deviations and intercorrelations among the variables analyzed

Table II.
Regression analysis of the effect of reward allocation procedures and incentive intensity on total help given (Models 1-3) and proportion of help that was autonomous (as opposed to dependent) in nature (Models 4-6)

Variable	Model no. 1 (<i>n</i> = 180)			Total help given Model no. 2 (<i>n</i> = 180)			Model no. 3 (<i>n</i> = 180)			Preportion of help that was autonomous (as opposed to dependent) in nature Model no. 4 (<i>n</i> = 171) ^a			Model no. 5 (<i>n</i> = 171) ^a			Model no. 6 (<i>n</i> = 171) ^a		
	<i>B</i>	SE	β	<i>B</i>	SE	β	<i>B</i>	SE	β	<i>B</i>	SE	β	<i>B</i>	SE	β	<i>B</i>	SE	β
Intercept	3.50	3.20		1.63	2.97		3.79	3.03		-0.54	0.30		-0.75	0.29		-0.68	0.30	
Age	-0.08	0.12	-0.05	-0.11	0.11	-0.07	-0.17	0.12	-0.10	0.03	0.01	0.21	0.03	0.01	0.21	0.03	0.01	0.20
Friends	0.15	0.15	0.07	0.22	0.14	0.10	0.29	0.15	0.14	-0.01	0.01	-0.03	0.00	0.01	0.02	0.01	0.01	0.03
Performance	0.42	0.08	0.37	0.47	0.08	0.42	0.47	0.08	0.41	-0.01	0.01	-0.09	-0.01	0.01	-0.05	-0.01	0.01	-0.05
Gender (1 = female)	-0.55	0.51	-0.08	-0.82	0.47	-0.12	-0.64	0.51	-0.09	0.10	0.05	0.17	0.08	0.05	0.13	0.08	0.05	0.13
Equality pay (dummy)				3.01	0.55	0.42	1.28	0.77	0.18				0.22	0.06	0.34	0.18	0.08	0.29
Mixed pay (dummy)				2.00	0.55	0.27	0.90	0.80	0.12				0.17	0.06	0.26	0.13	0.08	0.19
Incentive intensity																		
Equality × incentive intensity				0.85	0.46	0.12	-1.0	0.78	-0.15				0.09	0.05	0.15	0.03	0.08	0.05
Mixed × incentive intensity							3.43	1.10	0.38							0.08	0.11	0.10
Adj. <i>R</i> ²	0.13						2.14	0.30	0.24		0.04			0.14		0.09	0.13	0.12
ΔR^2								0.04					0.12					0.01

Notes: ^a *p* < 0.05; ^{**} *p* < 0.01; ^{***} *p* < 0.001; ^afor Models 4-6, sample size is only 171 because nine individuals acceded to zero help request

Model 2, indicate that relative to team-based pay grounded on norms of equity, both team-based pay grounded on norms of equality, and a mixed form of team-based pay are associated with significantly greater total help ($\beta = 0.42$ and $\beta = 0.27$, $p < 0.01$ in both cases). The inclusion of the two pay condition dummy variables as well as incentive intensity explained 14 percent more of the variance in total help ($p < 0.01$) than the control model (i.e. Model 1 in Table II).

Similarly, support was found for *H2* which posited a positive association between the extent to which team-based pay is allocated on the basis of norms of equality (i.e. team performance outcomes) as opposed to norms of equity (i.e. individual performance outcomes), and the proportion of help given that would be autonomous in nature. ANOVA results indicated a significant effect for team-based pay condition when controlling for each of the control variables noted above as well as incentive intensity ($F_{2,163} = 8.48$, $p < 0.001$), with mean proportion of help requests responded to on the basis of autonomous help (i.e. proportion autonomous help) being 0.04 (SD = 0.15), 0.23 (SD = 0.30) and 0.29 (SD = 0.36) for the equity, mixed and equality conditions, respectively. However, again a Tukey comparison indicated that while the differences in the mean proportion of autonomous help given by those in the equity condition and those in both the equality and mixed conditions were significant ($p < 0.01$ and $p < 0.05$, respectively), the differences between those in the equality and mixed conditions were not. Further clarifying the nature of the association between pay mode and the type of help provided, the regression results presented in Table II, column labeled Model 5, indicate that relative to team-based pay grounded on norms of equity, both team-based pay grounded on norms of equality, and a mixed form of team-based pay are associated with significantly greater autonomous help ($\beta = 0.34$ and 0.26 , respectively; $p < 0.01$ in both cases). The inclusion of the two pay condition dummy variables as well as incentive intensity explained 12 percent more of the variance in the proportion of autonomous help ($p < 0.01$) provided than the control model (i.e. Model 4 in Table II).

The moderating effects of incentive intensity on amount and type of help

H3a – which suggested that the effects of reward allocation procedure on total help would be amplified under conditions of higher incentive intensity – was also largely supported. ANOVA results indicated a significant effect for the interaction of incentive intensity and team-based pay condition when controlling for each of the control variables noted above ($F_{2,170} = 4.94$, $p < 0.001$), with mean number of help requests acceded to (i.e. total help score) being 4.1 (SD = 2.9), 4.4 (SD = 2.5) and 4.7 (SD = 2.6) for the equity, mixed and equality conditions, respectively, under the low (33 percent) incentive intensity condition and 3.3 (SD = 2.9), 6.1 (SD = 3.4) and 7.2 (SD = 4.4) for the equity, mixed and equality conditions, respectively, in the high (66 percent) incentive intensity condition. However, the regression results presented in Table II, column labeled Model 3, indicate a significant interaction only with respect to team-based pay grounded on norms of equality ($\beta = 0.38$, $p < 0.01$), with the mixed-intensity interaction being only marginally significant ($\beta = 0.24$, $p < 0.10$). The inclusion of the two interaction terms explained 4 percent more of the variance in total help than the direct effects model (i.e. Model 2 in Table II). While this effect size is smaller than that of the main effect of reward allocation mode, it is still statistically significant ($p < 0.01$). Per convention (Aiken and West, 1991), we plotted the nature of this interaction, finding it to be consistent with *H3a* (Figure 2) in that the impact

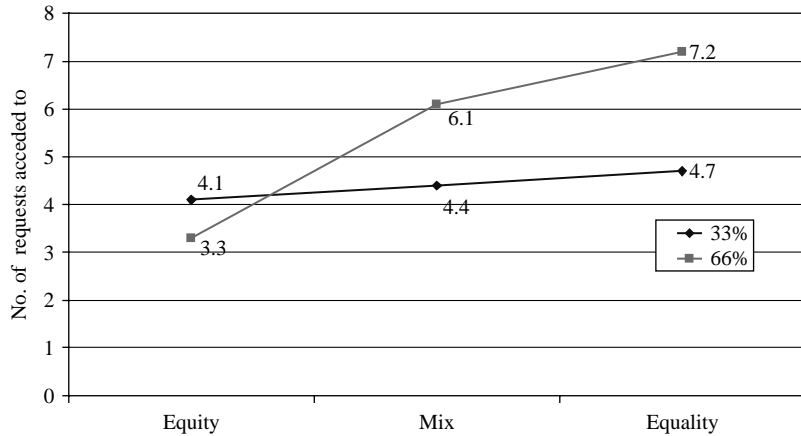


Figure 2.
The functional form of the pay-intensity interaction on total help

of reward allocation mode on helping is greater among those in the high incentive intensity condition than among those in the low incentive intensity condition.

In contrast, no support was found for *H3b* which posited that the effects of reward allocation procedure on the proportion of help provided that was autonomous in nature would be amplified under conditions of higher incentive intensity. ANOVA results indicated a non-significant effect for the interaction of incentive intensity and team-based pay condition when controlling for each of the control variables noted above as well as incentive intensity ($F_{2,160} = 0.24$; NS). Similarly, as can be seen in Table II, column labeled Model 6, neither of the two interaction terms tested (i.e. incentive intensity \times equality-based team pay, and incentive intensity \times mixed team pay) were significant, and the additional variance explained by these interaction effects above and beyond the main effect model was just 1 percent and not statistically significant.

Discussion

As noted earlier, research exploring whether and how the mode of team-based pay allocation influences team member behavior is sorely lacking. The findings noted above are important in that they begin to fill this gap, providing some of the first empirical insights into how the allocation of team-based pay influences two important dimensions of team member behavior, namely the extent and form of helping that team members provide to one another.

In terms of the extent of helping, the results of this study suggest that, consistent with predictions grounded on the principles of cognitive choice, when team-based pay is allocated on the basis of equity as opposed to equality norms, members of teams accede to significantly fewer teammate requests for technical assistance. Moreover, we found this effect amplified under conditions of greater incentive intensity. Specifically, consistent with the instrumentality predictions at the core of cognitive choice theory, we found that the differences in total help given between team members rewarded on the basis of equity – versus equality-based team pay widened as the degree of performance-contingent pay increased from 33 to 66 percent. Interestingly, however, while differences in the total amount of help given were significant between

participants rewarded on the basis of equity versus equality norms, the differences were not significant between participants rewarded on the basis of equality norms and those rewarded on the basis of mixed norms (i.e. a combination of equality and equity principles). This finding is potentially important in that it suggests that similar levels of team member help-giving may be achieved by rewarding team members using a combination of rewards contingent on both individual and collective performance.

In terms of the form of help provided, our findings also suggest that to the extent that members do in fact help one another, the mode of team reward allocation influences the type of help actually provided. Consistent with cognitive choice theory, we found such help to be more prevalent when team-based rewards were allocated equally or, in other words, when the reward contingency was structured such that more resource-demanding, autonomous help came at less of a personal cost. Nevertheless, consistent with what one might predict on the basis of behavioral economics and/or power dependence theory, we found a strong tendency among participants – regardless of the experimental condition to which they were assigned – to respond to neutral help requests (i.e. neither autonomous nor dependent in nature) by offering dependent forms of help. Indeed, even when members had the greatest incentive to provide more autonomous forms of help to their teammates (i.e. when team-based pay was equality-based and incentive intensity was high), team members still provided dependent help over two-thirds of the time. Still, we believe that our findings are potentially important in that they suggest that while team members may have a strong, natural tendency to accede to requests for assistance by providing dependent help, they remain sensitive to the way in which team-based rewards are allocated. Accordingly, our findings suggest that, particularly among managers placing a premium on team-based learning and the enhancement of team members' competencies, there may be a significant benefit of adopting team-based pay grounded on principles of equality as opposed to equity.

As to why participants were generally reluctant to provide autonomous help we can only speculate. One possible explanation may have to do with impression management concerns on the part of help-givers and an interest in meeting help-seeker expectations as to what serves as an acceptable, socially desirable or polite response to a request for assistance. Help providers may be concerned about the pecuniary costs of not meeting these expectations or, worse, simply being perceived as being ungracious or impolite. For example, help providers may be concerned that the help-seeker will reciprocate such “ungracious” behavior in the future when roles are reversed with today's help-seeker becoming tomorrow's help provider. In this sense, consistent with prospect theory (Tversky and Kahneman, 1991) help givers may overweigh the potential for resource loss (thus motivating that form of help drawing least on personal resources, namely dependent help), and underweight the potential for resource gain (thus reducing the perceived utility of that form of help most likely to result in long-term resource replenishment or gain, namely autonomous help).

Alternatively, the relatively low proportion of autonomous help giving may be a function of our operationalization of dependent versus autonomous help giving. As mentioned earlier, autonomous help giving was defined as assistance aimed at enhancing recipient competencies such that help-seekers will be better positioned to handle similar type of problems on an independent basis in the future. Based on this logic, we defined dependent help to include the provision of any of the following:

- a specific answer to the particular help request (e.g. name of a restaurant);
- a simple URL (www.zagats.com); or
- a combination of the two.

We operationalized autonomous help in terms of the remaining two help-giving alternatives available to participants, namely:

- (1) URL with search instructions; and
- (2) a specific answer with a URL and search instructions.

However, it is possible that for some help-givers, help in the form of a simple URL was viewed as a way to force help-seekers to develop information-sourcing competencies. That is, for some help-givers, a simple URL may have been provided with the specific intention of making the help-seeker more independent in the future, thereby enhancing total team-level resources. However, even with the adoption of this alternative operationalization, the tendency of team members to provide autonomous help was found to be only slightly higher with autonomous help still provided in only 34 percent of cases across conditions and in 47 percent of cases among those assigned to the high incentive intensity and equality resource allocation condition.

Interestingly, although our findings suggest that team reward allocation procedures do have a significant influence on help-givers' decisions regarding whether to provide help that is more dependent or autonomous in nature, once again the differences between those receiving equality-based and mixed team-based pay were not significant. Moreover, we found no evidence of any conditioning effect of incentive intensity with regard to the proportion of autonomous help provided. Indeed, even when adopting the alternative operationalization of dependent versus autonomous help noted above, the interaction between reward allocation procedure (i.e. equity versus equality) and incentive intensity remained statistically insignificant, suggesting that the link between reward allocation procedure and type of help is simply less sensitive to incentive intensity than the link between reward allocation procedure and the degree to which team members accede to teammates' help requests overall.

We speculate that the relative inelasticity of the link between the mode of reward allocation and helping type likely stems from our subjects' overwhelming tendency to provide dependent help regardless of condition. While the structuring of team-based incentives on the basis of equality norms may weaken such a tendency and result in relatively more autonomous helping, due to the pecuniary costs of autonomous helping to the help-giver noted earlier, there may be a limit to just how much autonomous help an individual is willing to provide even when equality-based incentives are enhanced. If in fact such an implicit threshold for autonomous help exists, it would explain why the impact of team reward allocation on helping type may not be as readily influenced by the relative magnitude of the incentive as the impact of team reward allocation on helping amount.

Limitations

As with any lab-based study, the results of this study may have limited external validity. In particular, as noted above, the 30-minute simulation may not have offered sufficient time for working team members to develop the kinds of on-going relationships necessary (and often already well-established in the field) to allow for

more extensive or competence-building (i.e. autonomous) help-giving. In such a short period of time, participants may not have been cognizant of any long-term benefits (in terms of team-level resources) of providing autonomous over dependent help, particularly since, at any time, they were receiving help or help requests from any one of five or six anonymous colleagues.

A second possible limit on external validity has to do with our focus on teams whose members were engaged in jobs not formally requiring task-interdependence. Although as noted above, such team contexts are widely prevalent, we cannot be certain that our findings apply towards members of teams characterized by jobs with requiring greater task interdependence. It may be that in such teams, the effects of relational cohesion (Lawler and Yoon, 1996) come into play far sooner and have a more robust attenuating effect on the helping-related implications of equity versus equality-based team rewards as team members seek to help one another less because of some instrumental benefit and more because of a sense of commitment to their teammates (Flynn, 2006).

Another possible limit on external validity was the operationalization of incentive intensity at rather high levels. As noted above, although the average bonus-to-base ratio for managerial employees is only 19 percent (Bloom and Milkovich, 1998), the relative incentive levels applied in the current study were substantially higher. The relatively high levels of incentive intensity may have upwardly biased our estimates of this factor's conditioning effects on the link between resource allocation procedure and help-giving. Nevertheless, we followed common practice in laboratory-based incentive research by setting the higher incentives rate at a level equivalent to at least twice the lower level incentive rate (Camerer and Hogarth, 1999).

Finally, additional limitations may stem from our focus on autonomous versus dependent help giving. Although, we partially framed this study around the assumption that the type of help team members give to one another may play an important role in influencing overall team effectiveness, we did not directly assess this relationship in the current study. Nor are we aware of studies other than those noted in the introduction that have even peripherally examined this issue. Consequently, while our results suggest that the mode of team-based reward allocation indeed influences the type of help team members give to one another, the implications of such effects with regard to overall team performance remain largely uncertain.

Directions for future research

The limitations noted above offer a number of interesting directions for future research. For example, in order to test the ecological validity of our findings, researchers might want to design field experiments focusing on teams whose members are engaged in more complex, interdependent tasks over the course of hours, days or weeks, rather than minutes. Furthermore, researchers might also want to explore a variety of contextual and individual factors potentially conditioning the link between team-based pay on allocation mode and helping. For example, researchers might assess the extent to which the relationships examined in the current study are conditioned by the extent of task interdependence. On the one hand, the relationships explored above should be strengthened under conditions of greater task interdependence given that, as noted by Podsakoff *et al.* (1997, p. 268), "mutual dependencies among members [...] require spontaneous give-and-take accommodating gestures among the parties in

order to achieve effective coordination of their respective efforts,” thus enhancing the underlying saliency to team members of help-giving and the development of team-member competencies. On the other hand, if under increasing levels of task interdependence there is already a heightened saliency of help-giving and team member competencies, there may be far less variance in helping (and autonomous helping in particular) for alternative modes of team-based pay to explain, resulting in an attenuated effect.

Researchers might also wish to assess the degree to which the relationship between team-based pay allocation mode and helping is time- or experience-dependent (i.e. attenuated over time). More specifically, theories based upon the principles of social exchange such as relational cohesion theory (Lawler and Yoon, 1996) suggest that over time, social and relational factors may play an increasingly stronger role in determining employee helping behavior than economic or instrumental factors. Findings consistent with such a notion (Deckop *et al.*, 1999; Stamper and van Dyne, 2001) suggest that, regardless of the way in which team-based pay is allocated, the outcome interdependence generated by it may, with experience (i.e. over time), enhance team members' sense of team identity and hence the social exchange basis upon which supportive intra-team relations are based (Aronson and Patnoe, 1997; Blau, 1964). Assuming that such a process of relational team identification emerges over time as team members accumulate exchange experiences with one another, the role of reward allocation in determining the overall level of help offered by teammates to one another may become increasingly less relevant over time. Clearly, however, such research would require a design grounded upon teams with a significantly longer “life-span” than those studied in the current experiment.

Additionally, researchers might want to take individual differences and culture into account. For example, in terms of individual difference, the degree to which alternative modes of team-based pay allocation influence member helping may be contingent upon individuals' moral development (Cropanzano *et al.*, 2003). Individuals at higher levels of moral development may be more inclined to engage in helping even when by doing so may incur a personal cost (Kahneman *et al.*, 1986). In terms of cultural differences, given that “cultural factors influence preferences concerning rules of reward allocation” (Erez and Early, 1993, p. 116), and that distributive fairness criteria likely vary from one country to the next (Morris and Leung, 2000), researchers may wish to explore the degree to which our findings are robust cross-culturally.

Finally, given that the current study was grounded on a social-psychological and episodic approach to the analysis of employee helping (Flynn, 2006), our focus was on compliance with specific teammate help-requests. Nevertheless, researchers may also wish to examine the impact that the mode of team reward allocation has on more spontaneous or unsolicited forms of helping such as those highlighted in the organizational citizenship behavior literature and typically examined in a more retrospective manner (e.g. offering and then providing assistance to an overburdened coworker). From a social exchange perspective, the benefits (to the help-giver) of providing assistance may be diminished when such help is unsolicited, since such assistance may not be perceived as help by the receiver, thus providing little basis for assuming eventual reciprocity (i.e. “payback”). Consequently, the effects of team reward allocation mode demonstrated in the current study may be more attenuated when a broader definition of helping (i.e. one not restricted to behavior in response to a solicitation for assistance) is adopted.

Conclusion

Despite the limitations noted above, given the relative absence of research examining the impact of team-based pay on key team processes such as help giving, we believe that the current study offers a significant contribution to both team and compensation research literatures. Notably, the findings suggest that reward allocation procedures, a key defining characteristic of the nature of team-based pay (DeMatteo *et al.*, 1998), play a significant role in shaping both the degree to which teammates actually accede to requests for technical assistance from their peers, as well as the nature of the help actually provided. The findings also suggest that a second defining characteristic of team-based pay, namely incentive intensity, significantly conditions the degree to which reward allocation procedures affect the amount (but not type) of help actually provided. Clearly, these findings require replication in a field context before it is possible to fully discuss managerial implications. Nevertheless, they suggest that compensation practices may provide organizational leaders with an important tool by which to shape team members' positive organizational and team-related behaviors such as help giving, thereby potentially enhancing overall team effectiveness.

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