

Team reward attitude: construct development and initial validation

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Summary

This paper reports the development of a team reward attitude construct and initial validation of a measure in a longitudinal study of team members (initial $n = 566$). Confirmatory factor analysis results provide support for a revised 9-item scale in two different time periods separated by four months. The measure was positively related to other team-related attitudes (preference for group work and perceived efficacy of teams) and locus of control, and negatively related to a proxy for ability. Implications of the research and future research directions are addressed. Copyright © 2001 John Wiley & Sons, Ltd.

Introduction

The use of team-based rewards is possibly the fastest growing reward practice, with up to 70 per cent of US organizations now using some type of team-based rewards (DeMatteo *et al.*, 1998; Ledford *et al.*, 1995). Conceptually, team-based rewards are often argued to have positive effects on cooperation and collective motivation (e.g., Shamir, 1990), behaviors critical to the success or ‘smooth functioning’ of the group (DeMatteo *et al.*, 1998: 144). But line of sight issues (Milkovich and Wigdor, 1991), the limits of team-based rewards in fostering individual motivation (DeMatteo *et al.*, 1998), and potential increased competition *between* groups (Mohrman *et al.*, 1992) are prevalent contrarian arguments. Thus, the argument that interdependent rewards are universally effective (or not so) has conceptual limitations, although such treatments continue to appear (e.g., Campion *et al.*, 1993). Interestingly, other researchers have long noted the contingencies involved in developing effective reward systems (e.g., Miller and Hamblin, 1963), with particular attention paid to the consistency of reward and task structures. Designs that incorporate either interdependent rewards and tasks, or independent rewards and tasks, tend to be more effective than mismatched designs (e.g., see Cotton and Cook, 1982 for a review).

With exceptions (e.g., Cable and Judge, 1994; DeMatteo and Eby, 1997—paper presented at the Annual Meetings of the Academy of Management, Boston, U.S.A.; Yamagishi, 1988), little research attention has been paid to individual differences in reward preferences or receptivity to team-based rewards. The few studies that have examined reward attitudes tend to focus on satisfaction with team-based rewards as an outcome, using personal characteristics, individual difference variables,

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and personality as predictors of such satisfaction (see DeMatteo *et al.*, 1998 for a review). These studies tend to overlook an important link in the process of forming team-based reward satisfaction, namely, individual attitudes about receiving team- or individually-based rewards. Individual differences such as personal characteristics, other attitudes, prior positive or negative experiences in teams, and personality variables likely contribute to the formation of reward attitudes which, in turn, influence satisfaction or dissatisfaction with this type of reward. We begin to address these issues by: (1) describing the team reward attitude (TRA) construct; (2) distinguishing it from related, but conceptually distinct, constructs; (3) outlining a potential set of correlates of TRA; (4) describing the development of a TRA measure; and (5) conducting tests for discriminant and convergent validity of the construct.

Team Reward Attitude (TRA)

TRA is an individual's general evaluation of receiving rewards based on the performance of the team; high TRA reflects a positive evaluation of receiving team-based rewards and low TRA reflects a positive evaluation of receiving individually-based rewards in team situations. TRA is anchored at one end by a positive evaluation of rewards distributed based on an equality principle and on the other by rewards distributed based on equity (Chen and Church, 1993). High TRA individuals positively evaluate equally distributed rewards in teams; low TRA individuals positively evaluate equity-based rewards in teams. Equity- or individually-based reward distribution systems place an emphasis on individual differences in performance within teams, and consequently reward team members differentially. Low TRA individuals are disposed toward this equity principle. By contrast, equality- or team-based reward distribution systems tend to punctuate the common elements and similarities among group members; members are rewarded equally as a result. High TRA individuals believe that teammates are 'all in this together' and prefer rewards based solely on team performance. Between these two poles are individuals whose attitudes are 'more evenly matched' such that the attitude is a compromise between different ways of distributing rewards (Leventhal *et al.*, 1980: 176). Chen and Church (1993), noting a scarce literature base, argued that reward attitudes should 'be given the same weight and attention as more rational and observable variables when exploring the effective application of various forms of distributive systems and principles' (p. 43).

We elaborate on TRA in accordance with the tripartite view of attitudes, i.e., individual attitudes have affective, cognitive, and behavioral components. The affective component of attitudes concerns how the attitudinal object makes an individual feel, i.e., a liking or disliking dimension (Hogan and Blake, 1996). The cognitive component of attitudes involves an individual's belief about the object, while the behavioral component involves behavioral intentions with respect to the attitudinal object. Therefore, individuals high on the TRA construct should: (1) like or prefer receiving team-based rewards in team contexts; (2) believe that such rewards are more effective than individually-based rewards in team contexts; and (3) intend to behave in ways consistent with their evaluation of attitudinal object (Bem, 1968).

A critical first step in construct development is to conceptually distinguish it from other similar concepts. Thus, it is necessary to understand how TRA conceptually relates to similar constructs and to fully delineate what TRA is *not*. We based our selection of potential correlates of TRA, in part, on Leventhal *et al.*'s (1980) theory of allocation preferences. These authors note that, beyond cultural differences, the primary determinants of allocation preferences are prior experiences and other related attitudes, i.e., reward attitudes are enmeshed in an array of experiences and related attitudes. The theory of allocation preferences also allows for the inclusion of stable individual differences in ability and

personality as correlates of reward attitudes; high ability team members and those concerned with individual productivity should favour equity-based reward systems. Moreover, since team-based reward structures involve a certain loss of control at the individual level, personality dimensions that relate to stable individual differences in control should also be associated with TRA. These criteria were used to guide the generation of variables that could logically be expected to relate to TRA. The initial set includes ability and experience factors, other team-related attitudes, and two personality variables (locus of control and proactive personality).

Correlates of TRA

Personal and experience factors

Several authors have proposed that individual ability levels may be the most important individual characteristic in forming reactions to team-based reward systems (e.g., DeMatteo *et al.*, 1998). The reasoning here is two-fold. First, high ability members may react negatively to equality-based reward systems since their performance is likely to be higher than the average group member, yet under such systems, the rewards are equal (DeMatteo *et al.*, 1997). Reward systems in teams that ensure that high-performing members get a greater proportion of the rewards are likely to be viewed more positively by high performers. High ability individuals may also be more concerned than those of average ability with free-rider effects in equality-based systems (Albanese and Van Fleet, 1985). The second aspect of the role of ability in forming TRA is one of individual recognition (DeMatteo *et al.*, 1998), i.e., higher ability individuals may prefer environs where the cognizance associated with their individual contributions is not masked by equality-based rewards (see Bretz and Judge, 1994). While not directly related to reward attitudes, two recent studies provide evidence in support of this position. In a laboratory study, Yamagishi (1988) found that high-performing group members often chose to leave a group and work individually when rewards were distributed equally to all group members. Park *et al.* (1994) found that turnover was greater among high performing individuals under a group incentive system, and greater among low performers when incentives were individually based.

The quality of one's prior team experiences is also a factor that, interestingly, has not received a great deal of attention as a predictor of reactions to team-based reward systems, but the theory of allocation preferences suggests that prior experiences are central in moulding allocation attitudes. Experience shapes perceptions of the utility of an attitudinal object such that those seen as furthering important goals are preferred (Brief, 1998). Individuals with prior positive team experiences are likely to have developed more positive attitudes toward team-based rewards. Thus, the following two hypotheses are proposed:

Hypothesis 1: Ability will be negatively related to TRA.

Hypothesis 2: Quality of prior team experiences will be positively related to TRA.

Other team-related attitudes

Two dimensions of the broader individualism/collectivism construct specific to work in teams (preference for group work and perceived efficacy of teams) may also relate to TRA. *Preference for group work* refers to the degree to which individuals have strong preferences for group rather than independent work. More specifically, preference for group work concerns the relative importance that an individual holds for work design or structure, rather than the structure of reward systems, *per se*. While we expect that preference for group work will be positively related to TRA, the variables are conceptually distinct. Most important, the object of TRA is the design of reward structures, while the

object of preference for group work is the design of task structures, i.e., interdependent or independent tasks. Individuals high in preference for group work like to interact with others in task situations (Wagner, 1995), while individuals low in preference for group work prefer the opposite and are attracted to situations where they can control their own work pace (Wagemen, 1995).

When comparing the conceptual differences between TRA and preference for group work, it is clear that an individual may prefer the atmosphere, social interaction, and comradery of teams, but still may prefer and believe in the receipt of individually-based rewards in these contexts, and *vice versa*. A professional athlete may enjoy playing and interacting with teammates (high preference for group work), but may prefer to be paid on the basis of individual statistics and accomplishments rather than team performance (low TRA). Similarly, an individual in an organization may prefer working in teams rather than working in isolation because of social interaction, but may have a negative attitude towards receiving rewards based only on team performance. For these individuals, team-based rewards may be less motivating than rewards for individual performance (Hayes, 1976). Moreover, working in teams but being rewarded for individual contribution, or a hybrid approach (Wageman, 1995), may be viewed more positively among individuals who prefer individually-based rewards.

Perceived efficacy of teams concerns an individual's beliefs regarding the ability of teams to accomplish work more effectively than individuals working alone, not an individual's attitude concerning rewards. An individual's belief in the use of teams as a general concept does not necessarily inform us as to how that person may or may not react to a given reward system, although the two concepts are likely to be positively related. At a more general level, Bandura (1989) argues that individuals with high efficacy beliefs are less likely to fear or be unhappy with factors related to a target (teams, in this case) since they believe they control them. It seems plausible that the more positive one's belief toward work accomplished in teams, the more positive one's attitude toward the rewards associated with it. Thus,

Hypothesis 3: Preference for group work will be positively related to TRA.

Hypothesis 4: Perceived efficacy of teams will be positively related to TRA.

Personality characteristics

A number of dispositions may relate to TRA, but as a point of departure, we focus on two specific facets (locus of control and proactive personality). We chose specific dimensions in lieu of broader ones (e.g., Big Five dimensions) since they more specifically concern control and environmental mastery—central issues in team reward situations. *Locus of control* is an enduring tendency to attribute the causality of events either to internal or external factors (Rotter, 1966). Initial evidence that those with an internal locus of control would prefer individually-based reward systems comes from a study by Witting *et al.* (1981). These authors found that when subjects attributed performance to luck, they tended to prefer equality-based systems, but preferred equity-based systems when performance was attributed to their own effort. Equity-based rewards highlight individual contributions to the whole and tend to emphasize a connection between effort and the proportionality of rewards. Internal locus of control individuals should have a more positive attitude toward reward systems that allow a clearer effort to outcome link; externals perceive a generalized disconnection between effort and performance and should thus be more positively inclined toward team-based rewards. *Proactive personality* refers to an individual's stable tendency to affect environmental change (Bateman and Crant, 1993). High proactive personality is rooted in individual differences in the need to manipulate and control the environment (e.g., Langer, 1983). Those low in proactive personality tend to be reactive, shaped by their environment, and adaptive. Operating under team-based reward systems involves a certain loss of control, i.e., the link between a proactive individual's manipulation attempts and outcomes is less certain

than with individually-based rewards. Hence, we expect that proactive personality and TRA will be negatively related.

Hypothesis 5: Locus of control (higher scores indicating external locus) will be positively related to TRA.

Hypothesis 6: Proactive personality will be negatively related to TRA.

Summary

The TRA construct was developed and some initial correlates outlined. The proposed correlates include ability, quality of prior team experiences, preference for group work, perceived efficacy of teams, locus of control, and proactive personality. The development of a TRA measure, a description of the samples employed, and tests of the predictions are described below.

Method

Samples

Pilot test sample

The pilot sample consisted of 101 junior and senior undergraduate business students at a university in the southern US. The factor structure of an initial set of items was examined using this sample. Participants completed questionnaires during class time and responses were anonymous. The sample comprised 75 males and 26 females with an average age of 24.21 years.

Primary sample

The primary sample comes from a larger study of team-member effectiveness (e.g., Duffy *et al.*, 2000; Shaw *et al.*, 2000). The participants were 566 upper-division undergraduate students enrolled in business administration courses at a large university in the southern United States. Permission was granted by 11 instructors (a total of 17 classes) employing a group-based classroom style for the research team to solicit participation from students. To more fully simulate actual work teams, a class was eligible if the instructor required groups to complete several projects/assignments throughout the term, assigned groups remained intact throughout the term, and substantial group-member interactions were assured by the class design. Participants were guaranteed confidentiality and were assured that participation was voluntary. Three phases of self-report data were collected. Participants completed an initial questionnaire during the first week of class (Time 1; background and demographic information, course expectations, personality and attitude variables, including TRA items). Time 2 transpired the week following mid-term exams (group processes including task interdependence items). Time 3 data (including TRA items) were collected just prior to final examinations (8 weeks after Time 2; 16 weeks after Time 1). The initial sample ($n = 566$) was 39 per cent female with an average age of 22 years. The modal class standing was junior level. Groups ranged in size from three to seven members with a mean size of 4.77 members ($SD 1.07$).

Measures— independent variables (Time 1)

Ability was measured with a commonly used proxy, grade point average (GPA) (e.g., Wagner, 1995). Participants reported their cumulative university GPA on the Time 1 questionnaire. Quality of prior

team experiences was measured on the Time 1 questionnaire with the question: 'Not including sports teams, have your experiences as a member of work teams been negative or positive?' The item has seven response options ranging from (1) very negative to (7) very positive. Following Wagner's (1995) approach, we used seven items taken from several sources (Barber *et al.*, 1996—paper presented at the Annual Meeting of the Academy of Management, Cincinnati, OH, U.S.A.; Erez and Earley, 1987; Wagner and Moch, 1986; Wagner, 1995) to measure *preference for group work*. A sample item is: 'When I have a choice, I try to work in a group instead of by myself.' *Perceived efficacy of teams* was measured with a 3-item scale from Barber *et al.* (1996—paper presented at the Annual Meeting of the Academy of Management, Cincinnati, OH, U.S.A.). A sample item is: 'Teams can more thoroughly evaluate options than any one individual can.' *Locus of control* was measured using six items from James (1973). Higher scores on the measure indicate a more external orientation. A sample item is: 'I have found that what will happen will happen, regardless of my actions.' *Proactive personality* was assessed with six items from Bateman and Crant (1993). A sample item is: 'If I see something I don't like, I fix it.' Because of space and time constraints, we included only a subset of the items from these measures; preference was given to items with higher average factor loadings in prior research.

Measures—control variables (Time 1, Time 2, and course instructors)

To account for minor differences in class design, class structure, and assignments, we included a set of *instructor* controls. Instructors who had more than one class included in the study had identical structures across their classes. Therefore, we created 10 dummy variables (to capture the 11 different instructors) and entered these into the analysis. Several other controls were included to control for differences in individual work and reward preferences, team context, and to synthesize the results with previously published studies from this data set. *Age*, *gender* (women = 0, men = 1), and *class standing* (sophomore = 1, junior = 2, senior = 3) were included since they may relate to group work preferences, reward preferences, and effort levels (e.g., Mason, 1995). These variables were included on the Time 1 questionnaire. *Team size*, *task interdependence*, and *reward interdependence* were also included to control for the effects of the team context. Team size was collected from course instructors. Task interdependence (e.g., I can't accomplish my tasks without information from my team members) was assessed with a 4-item scale from Campion *et al.* (1993) at Time 2. Reward interdependence was operationalized as the per cent of an individual's course grade that was based on team performance and was collected from course instructors.

Results

Initial scale development and item selection

The development of the TRA measure proceeded using attitude scale construction techniques for Likert-type scales. After a literature review to determine if similar scales existed, 13 initial TRA items were developed. Each item in the scale was an evaluative statement, agreement with which would indicate either a positive or negative attitude regarding receiving rewards based on team performance. Nine items were worded in a positive direction (i.e., a high score would suggest a positive attitude

concerning team-based reward) and four were worded in a negative direction for reverse scoring. The items also reflected each aspect of the tripartite structure; seven items were cognitive (beliefs about team-based rewards), three were affective (like or dislike), and three were behavioral (behavioral intentions in team-based reward situations). Scores were recorded in a 7-point Likert-type (strongly disagree–strongly agree) format.

The initial items were administered to the pilot sample of 101 participants and later analysed for evidence of unidimensionality and internal consistency reliability. The initial 13 items displayed high reliability ($\alpha = 0.83$), but several of the inter-item correlations were substantially lower than expected. The analysis proceeded with an exploratory principal components analysis with varimax rotation. Two factors were extracted from the procedure (nine and four items in each of the factors, respectively). The wording of the four items which loaded on the second factor were examined and, based on these analyses, two of these items were omitted from the primary study and major adjustments were made to the other items. Minor adjustments were made to several of the remaining nine items in preparation for the second data collection.

Primary sample: confirmatory analyses

Time 1 confirmatory factor analyses

The 11 revised TRA items were administered during the Time 1 phase of the longitudinal project. A confirmatory factor analysis (CFA) procedure (AMOS Version 3.6) was used to examine the structure of the scale. In addition to item factor loadings, several indicators of model fit were assessed including chi-square (χ^2). The goal of the χ^2 test is to fail to reject the null hypothesis, although this is a virtual impossibility with large sample sizes and many degrees of freedom (Bollen, 1989). To adjust for parsimony, the ratio of χ^2 to degrees of freedom (χ^2/df) was also examined with ratios of less than 3 : 1 considered indicators of good model fit. Goodness-of-fit (GFI), adjusted goodness-of-fit (AGFI; GFI adjusted for parsimony), and normed fit (NFI) indexes were also assessed. Values in excess of 0.90 are considered to be acceptable for GFI, AGFI, and NFI (Medsker *et al.*, 1994). Root mean square error of approximation (RMSEA) was also assessed with values less than 0.08 indicating reasonable model fit (Browne and Cudeck, 1992).

The first CFA analysis including all 11 revised TRA items (shown under Analysis 1 in Table 1), displayed only marginal levels of fit ($\chi^2 = 276.36$ (44 *df*, $p < 0.000$); $\chi^2/df = 6.28$, GFI = 0.908; AGFI = 0.861; NFI = 0.853; RMSEA = 0.145). The loadings for two items (TRA10 and TRA11) fell below the 0.40 lower-bound threshold commonly used for standardized factor loadings or parameter estimates (e.g., Ford *et al.*, 1986), but factor loadings for the other nine items fell within acceptable levels (0.50–0.75). TRA10 and TRA11 were dropped and an additional CFA analysis was conducted. These results are shown in the column labelled Analysis 2 in Table 1. The model fit of the revised 9-item TRA scale was good ($\chi^2 = 42.49$ (27 *df*, $p < 0.011$); $\chi^2/df = 1.57$, GFI = 0.984; AGFI = 0.970; NFI = 0.973; RMSEA = 0.060) and factor loadings for these items were in the acceptable range (0.51–0.76).

Additional CFA analyses were conducted in order to attempt to empirically distinguish TRA from preference for group work and perceived efficacy of teams constructs. In these tests, we compared a three-factor model (all items loading on the expected factors) with a one-factor model (see Table 2). Better model fit was found when the three-factor model was estimated ($\Delta\chi^2 = 1163.98$, $p < 0.000$). The three-factor solution was also superior to alternative two-factor solutions, i.e., when TRA items loaded on a single factor with preference for group work items ($\Delta\chi^2 = 1032.68$, $p < 0.000$) and perceived efficacy of teams items ($\Delta\chi^2 = 589.92$, $p < 0.000$). These results provide some evidence of the discriminant validity of TRA.

Table 1. Confirmatory factor analyses results for TRA items*

Item		Analysis 1 (Time 1)	Analysis 2 (Time 1)	Analysis 3 (Time 3)
TRA1	It makes sense to give rewards to team members based only on the overall performance of the team	0.75	0.76	0.57
TRA2	A team member's rewards should be based only on the team's performance	0.73	0.76	0.66
TRA3	Teams perform better when all team members get the same rewards	0.67	0.66	0.69
TRA4	When working on a team, I prefer the rewards to be based solely on team performance	0.62	0.63	0.69
TRA5	It's not fair to give every team member the same rewards regardless of how each person performs (<i>r</i>)	0.60	0.56	0.45
TRA6	I like to be rewarded based solely on my performance, not the team's performance (<i>r</i>)	0.58	0.52	0.45
TRA7	Team members work hard when they are rewarded equally	0.56	0.54	0.66
TRA8	Members of my team should share equally in the team's successes and failures	0.51	0.52	0.56
TRA9	I exert more effort when rewards are based solely on the team's performance	0.50	0.51	0.55
TRA10 [†]	I get upset when poor performers are given the same rewards as good team performers (<i>r</i>)	0.39	—	—
TRA11 [†]	When working on a team, my rewards should be based solely on my contribution to the team (<i>r</i>)	0.39	—	—
<i>Model fit indices</i>				
χ^2		276.36 ($p < 0.000$)	42.49 ($p < 0.011$)	62.70 ($p < 0.000$)
<i>df</i>		44	27	27
χ^2/df		6.28	1.57	2.32
GFI		0.908	0.984	0.972
AGFI		0.861	0.970	0.937
NFI		0.853	0.973	0.948
RMSEA		0.145	0.060	0.072

*Standardized factor loadings shown. Analyses 1 and 2 ($n = 566$). Analysis 3 ($n = 460$).

[†]Items dropped from final scale.

Time 3 confirmatory factor analysis

The nine TRA items were also subjected to a CFA procedure at Time 3. These results are shown in the column labelled Analysis 3 in Table 1. Factors loadings were somewhat lower across the nine items than those in Analysis 2, but were all above the recommended 0.40 threshold. Although model fit indices were not as good as those at Time 1, the fit was still acceptable on most indicators ($\chi^2 = 62.70$ (27 *df*, $p < 0.000$); $\chi^2/df = 2.32$; GFI = 0.972; AGFI = 0.937; NFI = 0.948; RMSEA = 0.072). The test-retest reliability of TRA was 0.42 ($p < 0.01$). The final 9-item scale includes six cognitive items (TRA1, TRA2, TRA3, TRA5, TRA7, TRA8), two affective items (TRA4, TRA6), and one behavioral item (TRA9).

Hypothesis tests

Descriptive statistics and correlations for all study variables are shown in Table 3. The tests of the hypotheses are shown in Table 4. The hypotheses were tested using predictor variables from Time 1 and Time 3 TRA. A hierarchical regression approach was used; instructor dummy variables and

Table 2. Confirmatory factor analysis results for TRA, preference for group work, and perceived efficacy of teams items*[†]

Item	Factor 1	Factor 2	Factor 3
TRA9 I exert more effort when rewards are based solely on the team's performance	0.75		
TRA2 A team member's rewards should be based only on the team's performance	0.74		
TRA7 Team members work hard when they are rewarded equally	0.64		
TRA3 Teams perform better when all team members get the same rewards	0.64		
TRA6 I like to be rewarded based solely on my performance, not the team's performance (<i>r</i>)	0.64		
TRA4 When working on a team, I prefer the rewards to be based solely on team performance	0.59		
TRA5 It's not fair to give every team member the same rewards regardless of how each person performs (<i>r</i>)	0.55		
TRA8 Members of my team should share equally in the team's successes and failures	0.55		
TRA1 It makes sense to give rewards to team members based only on the overall performance of the team	0.54		
I prefer to work on team rather than individual tasks		0.87	
When I have a choice, I try to work in a group instead of by myself		0.78	
I personally enjoy working with others		0.72	
Working in a group is better than working alone		0.72	
Given the choice, I would rather do a job where I can work alone rather than do a job where I have to work with others in a group (<i>r</i>)		0.71	
I like to interact with others when working on projects		0.71	
I prefer to do my own work and let others do theirs (<i>r</i>)		0.58	
I believe teamwork can produce better results than individual efforts			0.79
Teams can more thoroughly evaluate options than any one individual can			0.64
Working in teams stimulates innovation			0.63

*Model fit (3-factor solution): $\chi^2 = 397.63$ (149 *df*; $p < 0.000$); $\chi^2/df = 2.67$, GFI = 0.931; AGFI = 0.913; NFI = 0.920; RMSEA = 0.09.

Model fit (1-factor solution): $\chi^2 = 1561.61$ (152 *df*; $p < 0.000$); $\chi^2/df = 10.27$, GFI = 0.677; AGFI = 0.596; NFI = 0.665; RMSEA = 0.26.

Model fit (2-factor solution, TRA items loading with preference for group work items): $\chi^2 = 1430.31$ (151 *df*; $p < 0.000$); $\chi^2/df = 9.47$, GFI = 0.694; AGFI = 0.614; NFI = 0.693; RMSEA = 0.18.

Model fit (2-factor solution, TRA items loading with perceived efficacy of teams items): $\chi^2 = 987.55$ (151 *df*; $p < 0.000$); $\chi^2/df = 6.54$, GFI = 0.801; AGFI = 0.760; NFI = 0.788; RMSEA = 0.12.

[†]*n* = 566.

other controls were entered on the first step, ability and personality on step 2, and quality of prior team experiences and team-related attitudes on the final step. As Table 4 shows, ability and personality explained 9 per cent of the variance in Time 3 TRA, while experience and attitudes explained 6 per cent. *Hypothesis 1* was supported as ability was negatively related to TRA ($\beta = -0.23$, $p < 0.01$). Quality of prior team experiences was not related to TRA ($\beta = 0.02$, n.s.) and thus *Hypothesis 2* was not supported. The two team-related attitudes were significant predictors of TRA [preference for group work ($\beta = 0.21$, $p < 0.01$); perceived efficacy of teams ($\beta = 0.09$, $p < 0.05$)]. *Hypotheses 3* and *4* were thus supported. *Hypothesis 5* was supported as external locus of control was associated with a higher TRA ($\beta = 0.10$, $p < 0.05$), but proactive personality (*Hypothesis 6*) was not significantly related ($\beta = -0.03$, n.s.).

Table 3. Descriptive statistics and zero-order correlations among study variables[†]

	Mean	SD	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1. Age	21.90	4.21	n/a													
2. Gender	0.39	0.49	0.04	n/a												
3. Class standing	3.19	0.83	0.23 [†]	-0.13 [†]	n/a											
4. Team size	4.77	1.07	0.05	0.03	0.15 [†]	n/a										
5. Task interdependence	4.37	1.05	0.03	0.01	0.04	0.03	(0.70)									
6. Reward interdependence	38.21	22.71	0.02	-0.04	0.25 [†]	0.41 [†]	0.15 [†]	n/a								
7. Ability (GPA)	2.89	0.52	0.01	0.23 [†]	-0.13 [†]	-0.05	0.01	-0.12 [†]	n/a							
8. Quality of prior team experiences	5.22	1.46	-0.14 [†]	-0.07	-0.14 [†]	-0.02	-0.02	-0.06	-0.16 [†]	n/a						
9. Locus of control	3.47	0.88	-0.10 [†]	-0.07	-0.01	-0.07	0.00	0.01	-0.18 [†]	-0.05	(0.78)					
10. Proactive personality	5.15	0.62	0.11 [†]	-0.10 [†]	0.03	0.02	0.06	-0.10 [†]	0.08*	-0.15 [†]	-0.21 [†]	(0.72)				
11. Preference for group work	4.66	1.12	-0.14 [†]	-0.09*	-0.04	-0.01	0.03	0.01	-0.25 [†]	0.60 [†]	-0.06	-0.12 [†]	(0.88)			
12. Perceived efficacy of teams	5.43	0.92	0.02	-0.10 [†]	0.06	0.00	0.05	0.04	-0.17 [†]	0.44 [†]	-0.10*	-0.21 [†]	0.59 [†]	(0.73)		
13. TRA (Time 1)	4.14	0.96	-0.02	-0.16 [†]	-0.04	0.01	0.04	0.08*	-0.29 [†]	0.31 [†]	0.08*	-0.07*	0.42 [†]	0.30 [†]	(0.85)	
14. TRA (Time 3)	4.62	0.93	-0.05	-0.22 [†]	0.07	0.04	0.05	0.16 [†]	-0.39 [†]	0.21 [†]	0.14 [†]	-0.04	0.29 [†]	0.21 [†]	0.42 [†]	(0.82)

[†] $p < 0.05$; * $p < 0.01$. One-tailed tests reported. Coefficient α 's are reported in parenthesis in the diagonal where appropriate. Pairwise deletion procedure used to generate the table (n 's = 288-566).

Table 4. Regression results

	Time 3 TRA		
	Model 1	Model 2	Model 3
Instructor controls	‡	‡	‡
Age	−0.04	−0.04	0.02
Gender	−0.23 [†]	−0.15 [†]	−0.13 [†]
Class standing	−0.06	−0.07	−0.07
Team size	−0.08	−0.08	−0.05
Task interdependence	0.06	0.07	0.06
Reward interdependence	0.05	0.08	0.06
Ability (GPA)		−0.31 [†]	−0.23 [†]
Locus of control		0.08	0.10*
Proactive personality		−0.04	−0.03
Quality of prior team experiences			0.02
Preference for group work			0.21 [†]
Perceived efficacy of teams			0.09*
Total R^2	0.16 [†]	0.25 [†]	0.31 [†]
ΔR^2 Block	0.16 [†]	0.09 [†]	0.06 [†]

* $p < 0.05$; [†] $p < 0.01$; $n = 351$.

[‡]The set of instructor dummy variables is denoted by ‡. Gender (male scored higher); class standing (1 = sophomore, 2 = Junior, 3 = Senior); quality of prior team experiences (positive experiences scored higher), locus of control (external locus scored higher).

Discussion

The results of this study provide initial support for a 9-item TRA measure including evidence of its unidimensionality and high internal consistency reliability in two time periods separated by four months. When examined in isolation, the nine TRA items loaded on a single factor, with acceptable factor loadings and generally acceptable indications of model fit. More important, in CFA analyses, the TRA items could be empirically distinguished from conceptually distinct, but related, preference for group work and perceived efficacy of teams items. TRA was strongly and negatively related to a proxy for individual ability (GPA) as predicted, i.e., higher ability individuals prefer receiving rewards based on their own performance. Also, as predicted, other team-related attitudes were significantly related and a significant relationship was also found with locus of control such that externals had more positive evaluations of team-based rewards. Two predictions were not supported. Proactive personality was not a significant predictor of TRA at Time 3, and while quality of prior team experiences related to TRA in bivariate correlations, the relationship between quality of team experiences and Time 3 TRA was not significant when other team-related attitudes were taken into account.

Several interesting areas for future research are possible in light of this study. Researchers could examine the dynamics of individual attitudes concerning team-based rewards in team contexts with varying types of tasks and interdependence. In this study, the type of task and the nature of the interdependence were generally consistent across teams and classes, although there was some variation in the degree of interdependence. While we would argue that individuals hold general evaluations concerning how rewards should be distributed, differential reactions to team-based rewards depending on type of task being completed and the type of task interdependence (e.g., reciprocal, pooled, or sequential) are certainly possible. Several research paths are possible in this regard. More specific measures of

TRA could be developed that tap situationally-specific reward attitudes, i.e., the type of reward individuals prefer in different situational contexts. Our measure taps a general evaluation in a broad context (work teams), but individuals may make finer-grained distinctions. More specific measures may provide more predictive power. Second, as Leventhal *et al.* (1980) discuss, reward allocation attitudes may vary to the extent that the goals of the team vary. Again, while individuals may have general attitudes about receiving team-based rewards, these attitudes may be embedded in a system of situational cues tied to collective goals. Third, reward allocation attitudes may be influenced by other individual differences not included in our study, including one's perspective on self-interest and other personality variables.

Future research could also explore how TRA operates in the prediction of individual and team performance in different contexts. This research will likely focus on the interactive effects between TRA and situational or contextual variables. A growing body of research highlights that the main effects of individual differences in group contexts are not particularly strong and individual differences by situational factor interactions provide more explanatory power (e.g., Wagner, 1995). Developing interactive predictions between TRA and situational variables may lead to more precise theories of team functioning. It follows that the most powerful effects of TRA will be evidenced in interactive effects with reward contingency variables. As such, investigations of TRA may also be of practical use. Designing and implementing compensation and reward systems which cater to attitudes of current organizational members may improve employee motivation and performance and reduce undesirable work behaviors.

Research on TRA could also be conducted at the group- or team-level. For example, much research investigates the implications of diversity profiles, both in terms of social category and value diversity, on team effectiveness outcomes. It is possible that divergence of team-member attitudes concerning rewards, task preference, and other specific attitudinal variables may play a role in predicting team effectiveness. In this sense, TRA may have implications for the functioning of work teams and possibly affect the behavior of other team members.

Some of the hypotheses presented here may be culture bound. Kirkman and Shaprio (1997) argue that cultural values predict reactions to team-related organizational interventions (see also Earley, 1989). Norms about allocation schemes are built into the familial, educational, and political systems of society and therefore affect individual's attitudes about allocations (Leventhal *et al.*, 1980). Thus, while ability may negatively relate to TRA in the US culture, the relationship may be reversed in more collectivistic cultures. In general, it seems reasonable that differences in TRA will appear across cultures, and that these differences should be investigated. Finally, future research could also explore the role of gender in reward allocation situations, as it was a consistent correlate of TRA in our analyses.¹

The weaknesses of the study should also be highlighted. This study was an initial step in the validation of TRA and, thus, the measure should be examined across several samples and in different contexts. The findings (e.g., modest factor loadings on some items) may suggest that minor modifications or perhaps additional items are needed. TRA was also developed using the tripartite view, although some researchers have argued that the three aspects will not necessarily apply to all attitudes (e.g., Brief, 1998). Future investigations should carefully examine if this structure is appropriate for reward attitudes. While we used student samples, the participants in the primary study were within a year of entering the job market or graduate programmes and reported having significant work experience. These factors should ameliorate concerns about the development of team-related attitudes to some extent. We also used GPA, a common proxy for ability, although GPA could be considered a measure of motivation, or an amalgam of motivation and ability. Future research could improve on this study by including more direct measures of ability such as cognitive ability or complexity. Moreover, practical concerns dictated that only a limited set of correlates, personality characteristics in particular, could be

¹We thank an anonymous reviewer for many of these ideas.

examined. Future research that includes more general personality characteristics (e.g., dimensions of the five Factor Model), other team-related and general attitudes, and experience variables are needed. Additional correlates, such as Rubin and Brown's (1975) motivation orientation construct or social motives identified by Deutsch (1985), could also be included in these studies. The TRA construct described here was specific to team-based rewards, but another important step is to develop specific constructs that may better tap other types of rewards (monetary and non-monetary) and recognition. The proposed TRA measure was generic in nature, i.e., we did not attempt to discriminate between various types of rewards in attempting to measure the overall attitude. Additional samples, contexts, and situations may allow researchers to tailor the existing scale to tap related, but more situation-specific, reward attitudes. Finally, including TRA in models that include non-same source data, such as behavioral variables and performance, is needed to more thoroughly establish the construct validity of TRA.

To summarize, this study reported the development and initial validation of a measure of TRA. While a large literature investigating aspects of team structure and task characteristics exists, we attempted to fill a gap by exploring team-member attitudes about different reward distributions. The measure demonstrated generally acceptable psychometric properties and could be empirically distinguished from other related constructs. Some support was found for expected relationships with other constructs. The results help balance the literature by elaborating on a potentially important individual attitudinal difference in team contexts.

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