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Competition and Achievement Goals in Work Teams

Heike Heidemeier [a] & Jenny V. Bittner [a]
[a] Jacobs University Bremen

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Competition and Achievement Goals in Work Teams

Heike Heidemeier and Jenny V. Bittner
Jacobs University Bremen

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This study examined how competition within teams influences which type of achievement goals employees adopt. We studied how dispositional learning-goal and performance-goal orientation interact with team-level competition and predict whether team members adopt state learning or performance achievement goals. State achievement goals, in turn, were proximal antecedents of two outcome measures: job-related self-efficacy and supervisory ratings of job performance. The participants were 502 employees and 55 supervisors. Results confirmed that competition was positively associated with state performance goals. Trait performance-goal orientation influenced whether competition was negatively associated with state learning goals. In highly competitive teams, trait performance-goal orientation was negatively related to state learning goals, whereas in less competitive teams, a performance-goal orientation was positively related to state learning goals.

In educational settings, and in sport psychology, numerous studies have been conducted on the relative effects that competition and cooperation have on achievement in groups (Bergin, 1995; Cervello, Rosa, Calvo, Jimenez, & Iglesias, 2007; Johnson, Maruyama, Johnson, Nelson, & Skon, 1981; Newton & Duda, 1999). Meta-analytic research has concluded that cooperative goal structures are superior over competitive and individualistic group goals with regard to achievement in tasks like verbal problem solving, retention, and concept attainment (Johnson et al., 1981). In view of the negative implications that competition in groups has on cognitive tasks, it is interesting to note that competitive behavior is of rather high salience in many business contexts. Experimental research has even used a business context to prime an experimental group with "competitiveness" as a behavioral norm (Kay, Wheeler, Bargh, & Ross, 2004). Still, competition has only rarely been a focal contextual factor in organizational research. For instance, there is evidence that cooperative rather than competitive goals increase team performance (e.g., Lu, Tjosvold, & Shi, 2010; Tjosvold & Yu, 2004).

To investigate motivational processes that carry the effects of competition, we examined whether perceived competition within work teams is related to the type of achievement goals team members adopt. Different types of achievement goals (Baranik, Barron, & Finney, 2007; A. J. Elliot & Church, 1997) facilitate or inhibit many desirable outcomes in work settings (see, e.g., Payne, Youngcourt, & Beaubien, 2007). Learning achievement goals imply that individuals focus on task-referenced standards for achievement and seek to enhance their competence (Elliot & Dweck, 1988). Learning goals have positive effects on many desirable outcomes, including

Correspondence should be sent to Heike Heidemeier, RWTH Aachen University, Department of Psychology, Jaegerstrasse 17-19, 52066 Aachen, Germany. E-mail: heidemeier@psych.rwth-aachen.de

task and job performance, self-efficacy, effective learning strategies, and emotional well-being in achievement situations (Daniels et al., 2009; Dierdorff, Surface, & Brown, 2010; Payne et al., 2007). Both learning and performance achievement goals can result in positive outcomes and high self-set goal levels, but for different underlying reasons. Performance achievement goals imply that individuals focus on normative or social references for achievement and seek positive evaluations of their competence (Dweck & Leggett, 1988). For this reason they are associated with avoidance behavior and reduced self-efficacy after failure, higher levels of state anxiety, as well as more shallow learning, and reduced feedback-seeking (Payne et al., 2007; VandeWalle, Ganesan, Challagalla, & Brown, 2000). Whether employees focus on learning or performance achievement goals may represent a mediating mechanism that links situational factors, like competition in teams, to desired outcomes, like self-efficacy.

Achievement goal theory posits that both individual differences and situational factors predict which type of achievement goals individuals adopt (e.g., Jagacinski, Madden, & Matthew, 2001). Accordingly, we refer to a person–situation–interaction framework (Mischel, 1973; Mischel & Shoda, 1995; Tett & Guterman, 2000) to examine how team-level competition influences individual-level achievement goals (i.e., we examine cross-level relationships). Achievement goals, in turn, represent proximal antecedents of outcome measures, like self-efficacy and job performance. To investigate whether team-level competition influences achievement goals, we take into account that motivational dispositions may largely explain state achievement goals. We also consider that situational factors affect individuals differently. Team-level competition is presumed to provide situational cues that activate corresponding motivational traits, such as a dispositional performance-goal orientation (PGO). In the following, we discuss the model that appears in Figure 1 to derive the hypotheses we examine.

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INDIVIDUAL-LEVEL ANTECEDENTS OF ACHIEVEMENT GOALS

Hierarchical models of motivation presume that dispositional goal orientations determine the type of goals that individuals set in specific situations (cf. Brett & VandeWalle, 1999). In our model

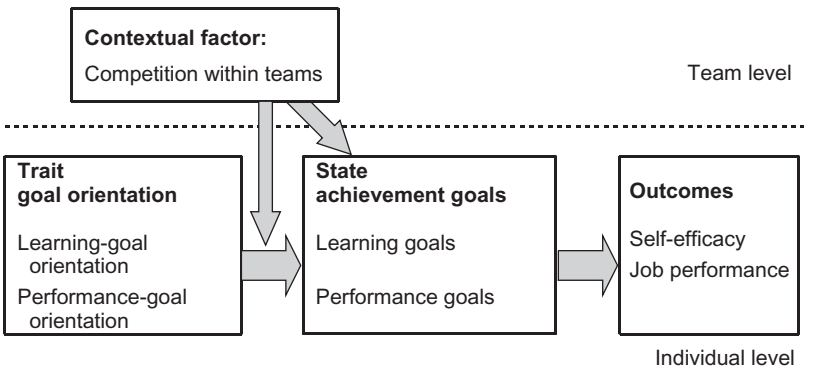

FIGURE 1 Schematic illustration: The postulated multiple goal model and effects of competition.

(Figure 1), dispositional learning-goal orientations (LGOs) and PGOs represent individual-level antecedents of state achievement goals. Throughout the text we refer to dispositional goal concepts as "trait goal orientations," and to situational goal concepts as "state achievement goals." Numerous studies have provided evidence concerning the validity of goal orientations. A LGO rather than a PGO is associated with higher motivation to learn, higher levels of meta-cognitive activity, self-efficacy (Ford, Smith, Weissbein, & Gully; 1998, Kozlowski, 1998; Payne et al., 2007), feedback seeking (VandeWalle et al., 2000), improved transfer (Kozlowski et al., 2001), or commitment and altruistic behavior in teams (Porter, 2005; Porter, Webb, & Gogus, 2010). LGO and PGO are related to two basic motivational dispositions: need for achievement and fear of failure. Need for achievement is known to facilitate learning achievement goals (A. J. Elliot & Church, 1997; A. J. Elliot & Murayama, 2008), whereas performance achievement goals are facilitated if high levels of fear of failure and need for achievement are coupled (A. J. Elliot & Murayama, 2008). In our study, dispositional LGO and PGO should yield similar relationships with state achievement goals. Trait LGO should be positively associated with state learning achievement goals, whereas state performance achievement goals should be facilitated by high levels of both trait PGO and LGO. By implementing a path model that includes all trait and state goal concepts (see Figure 1) we put these expectations to test.

In accordance with a person–situation–interaction framework (Kanfer, 1990; Shalley, Zhou, & Oldham, 2004; Tett & Guterman, 2000), we examined how a (context-free) individual difference variable interacts with situational features (i.e., team-level competition) to predict which achievement goals employees adopt at work (i.e., in a specific situation). Button, Mathieu, and Zajac (1996) validated a context-free measure of dispositional LGO and PGO (Dweck & Wortman, 1982; A. J. Elliot & Dweck, 2005), which we used to capture rather stable motivational orientations that participants adopt also outside the work context. Theory and empirical evidence suggests that team-level competition provides trait-relevant cues that activate the expression of trait PGO (Chan & Lam, 2008; Lam, Yim, Law, & Cheung, 2004; McGregor & Elliot, 2002; Stapel & Koomen, 2005). That is, we expect trait LGO and PGO to be related to state learning and performance achievement goals, and trait PGO to be activated by team-level competition.

TEAM-LEVEL COMPETITION AND STATE ACHIEVEMENT GOALS

Besides individual dispositions, situational factors influence which type of achievement goals employees adopt. An underlying mechanism is that individuals act in accordance with situational demands. Team members interact frequently and share many workplace experiences. In our study, members of the same team also reported to the same supervisor. Accordingly, many contextual influences that participants perceived may originate in work teams, including perceptions of competition. Competitive environments provide situational cues that make social references for achievement salient, suggesting that being more successful than others is important. The achievement goals employees adopt may reflect the influence of these situational cues. In fact, in experimental research, competitiveness has been found to induce performance achievement goals (e.g., Bergin, 1995; Lam et al., 2004). At the same time, there is empirical evidence that team-level competition may lead employees to focus away from learning achievement goals. Lam et al. (2004), for instance, reported that subjects in a competitive experimental condition were not only more likely to adopt performance goals but were also more willing to sacrifice learning

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opportunities to avoid unfavorable self-evaluations in case of failure. Accordingly, we expect competition within teams to be related to state performance and learning achievement goals in similar ways. Both individual perceptions of competition in teams (perceived competition) and aggregated perceptions of competition within teams (team-level competition) should be positively associated with state performance achievement goals, whereas they should be negatively related to state learning achievement goals.

H1a: Perceived competition is positively associated with performance achievement goals.
H1b: Team-level competition is positively associated with performance achievement goals.
H2a: Perceived competition is negatively associated with learning achievement goals.
H2b: Team-level competition is negatively associated with learning achievement goals.

We also expect competition within teams to be negatively related to job-related self-efficacy beliefs. Competition in groups has been found to determine whether upward social comparisons among team members (e.g., observing a successful or high-performing peer) induce contrast or assimilation effects. In competitive settings, upward social comparisons are made with a focus on "differences" and therefore result in a contrast effect, which is associated with less favorable self-evaluations (Stapel & Koomen, 2005). For example, Chan and Lam (2008) reported that students' self-efficacy decreased when they watched a competent peer in a competitive condition, whereas no change in self-efficacy occurred in a noncompetitive condition. Similarly, competition within teams may be associated with more negative self-evaluations and reduced job-related self-efficacy. That is, we expect individual and team-level perceptions of competition to be negatively related to self-efficacy.

H3a: Perceived competition is negatively associated with employees' job-related self-efficacy.
H3b: Team-level competition is negatively associated with employees' job-related self-efficacy.

INDIVIDUAL-CONTEXTUAL INTERACTIONS

Competition in groups is related to social references for achievement and perceptions that individual goal attainment is negatively affected by others' goal attainment (Deutsch, 1949). As a result, the situational cues that competitive settings provide may activate the expression of trait PGO. Trait PGO is defined by a desire to perform well with regard to social references for achievement. There is also empirical evidence that PGO is relevant to behavior in competitive settings. For instance, individual goal orientations moderate whether individuals make challenge or threat appraisals in competitive settings (McGregor & Elliot, 2002). Challenge and threat appraisals, in turn, mediate the relationship between mastery goals and well-being (Adie, Duda, & Ntoumanis, 2008). The concept of situation trait relevance suggests that motivational dispositions are expressed in trait-relevant situations (e.g., Tett & Burnett, 2003; Tett & Guterman, 2000). Applying the concept of situation trait relevance (Tett & Guterman, 2000) to competition in teams, we expect perceived and team-level competition to interact with dispositional PGO. Competition in teams should affect those most strongly who score high on trait PGO. Previously we argued that competition is positively related to state performance and negatively related to

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state learning achievement goals. According to an interactionist view, the degree to which competition in teams facilitates performance and impairs learning achievement goals may depend on individual scores on trait PGO. Individual and team-level perceptions of competition in teams may lead team members who score higher on trait PGO to focus on evoking favorable judgments of their competence in others (i.e., on performance achievement goals) while they focus away from developing their competence through learning.

H4a: Perceived competition moderates the relationship between trait PGO and state learning achievement goals.
H4b: Team-level competition moderates the relationship between trait PGO and state learning achievement goals.
H5a: Perceived competition moderates the relationship between trait PGO and state performance achievement goals.
H5b: Team-level competition moderates the relationship between trait PGO and state performance achievement goals.

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RELATIONSHIPS BETWEEN STATE ACHIEVEMENT GOALS AND OUTCOME MEASURES

The positive effects that state learning achievement goals have on outcomes like self-efficacy, task performance (Payne et al., 2007; Potosky & Ramakrishna, 2002), creativity (Hirst, Knippenberg, & Zhou, 2009), and feedback seeking (VandeWalle et al., 2000) are well documented. The meta-analytical integration of empirical results conducted by Payne and colleagues (2007) concluded that state learning achievement goals are positively associated with task-specific self-efficacy, whereas performance achievement goals are unrelated to task-specific self-efficacy (Payne et al., 2007). Accordingly, we expect learning achievement goals to be positively associated with job-related self-efficacy. We examine general job-related self-efficacy as an outcome measure, as many findings attest to the desirable effects of the beliefs that individuals have in their own abilities and the relevance of these beliefs to actual achievement (Bandura, 1991, 1997). Self-efficacy makes unique contributions to the motivational process (Phillips & Gully, 1997; Stajkovic & Luthans, 1998), and the effects of individual achievement goals on learning and task performance have been found to be fully mediated by task-related self-efficacy (e.g., DeShon, Kozlowski, Schmidt, Milner, & Wiechmann, 2004; Potosky & Ramakrishna, 2002).

H6: State learning achievement goals are positively associated with job-related self-efficacy.

Whether state learning or performance achievement goals play a more important role in predicting desired outcomes should depend on the nature of the outcome measure. To demonstrate that the effects of competition in teams are more or less desirable depending on the outcome measure, we examine supervisory ratings of job performance as a second dependent variable. Performance goals can have positive effects (Midgley & Middleton, 2001; Payne et al., 2007), especially if the criterion is not learning, but performing well in the presence of others. Supervisory evaluations are memory-based subjective evaluations of job performance. Accordingly, we expect that state performance achievement goals are positively related to supervisory evaluations of job performance (Payne et al., 2007). That is, although state learning

achievement goals should be most relevant to self-efficacy beliefs, performance goals are likely to be highly relevant for supervisory evaluations of job performance (i.e., to seeking positive evaluations by others).

H7: State performance achievement goals are positively associated with supervisory ratings of job performance.

METHOD

A Multiple Goal Model

We aim to test our hypotheses within a path model that includes all goal concepts simultaneously. We do so for a number of reasons. LGO and PGO are independent traits (Nicholls, Cheung, Lauer, & Patashinick, 1989) and recent research has found that LGO and PGO have different effects depending on their combination (Chen, Gully, Whiteman, & Kilcullen, 2000; Darnon, Dompnier, Gillieron, & Butera, 2010; Harackiewicz, Barron, Carter, Lehto, & Elliot, 1997; Pintrich, 2000). Accordingly, we take the combined effects of trait LGO and trait PGO into account by analyzing their simultaneous effects. Besides, incorporating multiple goals into the model acknowledges that individuals may adopt multiple goals. Moreover, examining a multiple-goal model has statistical advantages. Testing the assumption that achievement goals serve as mediating states is more reliably achieved if the proposed multiple-mediators model is examined rather than singular relationships between each of the predictor variables and the outcome measure. Testing individual paths may yield biased estimates due to an "omitted variable problem" (for a discussion see, e.g., Brown, 1997; Preacher & Hayes, 2008).

Sample

A total of 502 employees from 55 teams were recruited from two large German companies in the automotive industry. Participants were informed that feedback would be provided in ways so individual reports cannot be identified. As team-level variables played an important role, work teams were the primary unit of sampling. Work teams stemmed from various business units, including production lines, research and development, personnel, administration, and financial services. Data were collected from 55 work teams, which had on average nine members. The members of each team reported to the same supervisor. We tried to sample complete teams and obtained a participation rate between 75 and 100% per team. 84 % of the participants were male and 16% female. The average age was 39.2 years, with the participants' age ranging from 22 to 62 years. The average tenure within the company was 13.1 years. One percent of the participants had no high school degree, whereas 18% possessed a high school degree, 34% a trade or technical high school degree, 15% a bachelor's degree, and 27% a master's degree or higher. Of the 10 groups of occupations described by ISCO-88 (see ILO, 1990), 7 were represented in the present sample: persons with a leadership role (0.7%), researchers or professionals (18.9%), technicians and associate professionals (36.4%), clerks (11.6%), service workers and shop or

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market sales workers (0.1%), craft and related workers (15.7%), plant and machine operators and assemblers (16.3%).

Measures

State Achievement Goals

To measure state learning and performance achievement goals we adapted two scales from the revised version of the Achievement Goal Questionnaire (A. J. Elliot & McGregor, 2001), which was published by A. J. Elliot and Murayama in 2008. To ensure that participants took notice of the items' situational reference, a heading in the questionnaire emphasized that the items referred to the job that participants presently occupied. The two three-item scales we used capture approach achievement goals. The learning achievement goal items read, "My goal is to learn as much as possible in my job," "My aim is to completely master the tasks required by my job," and "I am striving to understand the content of my job as thoroughly as possible" ($\alpha = .78$). The performance goal items read, "My aim is to perform well relative to my colleagues," "I am striving to do well compared to other employees," and "My goal is to perform better than others" ($\alpha = .85$).

Trait Goal Orientation

To assess the trait component of goal orientation, two sets of items were employed that have been empirically validated by Button et al. (1996). These authors proposed two scales that capture dispositional LGO and PGO. The respective items represent global behavioral tendencies and are not tailored to a specific context. The PGO scale comprises items that tap the degree to which the opinion of others and being better than others is important, as well as the tendency to seek out situations that make success likely. An example item of the PGO scale reads, "I like to work on tasks that I have done well on in the past," from 1 (*strongly disagree*) to 5 (*strongly agree*) (coefficient $\alpha = .75$). The LGO scale taps whether participants view the opportunity to learn new things and to seek out challenge as important. An example item of the LGO scale reads, "I prefer tasks that require learning new skills" (coefficient $\alpha = .82$). For both scales, factor analysis provided support for a one-factor solution. Note that we translated the goal orientation and achievement goal items into German. To ensure a close correspondence between our translations and the original items, we asked a native speaker to translate the German items back into English.

Outcome Measures

General *job-related self-efficacy* was measured by three items, which were adopted from a German scale that was validated by Abele, Stief, and Andrä (2000). These items were written to reflect the definition of self-efficacy proposed by Bandura (1991) and are designed to assess participants' beliefs in their job-related abilities. The items' reference to an occupation was changed so that items clearly referred to the participants' current job (e.g., "I am sure that I am able to meet the demands of my job, if I want to"; "I am not sure that I have all the abilities that my

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job requires"; "I am confident that I can deal with difficulties in my job, since I can rely on my abilities"; $\alpha = .64$). Ratings were made on a 5-point scale from 1 (*strongly disagree*) to 5 (*strongly agree*). Self-efficacy is an important mediator that links motivational processes to outcome measures, such as learning, creativity, and task-performance. Supervisors provided *ratings of job performance* for each of their direct reports. They provided ratings for six dimensions of job performance (quality of work, efficiency, task-relevant knowledge, interpersonal behavior, coworker support, ideas and initiative), which were aggregated into an average score of global job performance ($\alpha = .92$). All ratings were made on a 7-point scale from 1 (*below average*) to 7 (*above average*). Supervisors were informed that their ratings for each of their team's members were anonymized and linked only to anonymous team identification numbers.

Perceived Competition and Team-Level Competition

Perceived competition was assessed by the item "There is competition among the members of my team." Ratings were made on a 5-point scale from 1 (*strongly disagree*) to 5 (*strongly agree*). Team-level competition was calculated by averaging individual ratings for this item, an approach that other researchers have used successfully, for instance, to assess trust in teams (Choi, 2006). Because we examined a highly heterogeneous sample that included shop floor workers as well as employees working in a financial services department, we did not assess what factors were driving perceptions of competition (e.g., rewards, recognition, coworkers, etc.). For theoretical reasons and to correctly set up a multilevel model, perceptions of competition were conceptualized to exist at both the individual level ("perceived competition") and the team level ("team-level competition").

Control Variables

To rule out alternative explanations for the effects that goal orientations have in teams, we controlled for socio-demographic variables that are correlated with goal concepts, including age, sex, and level of education (see Maehr, 1983; Midgley & Middleton, 2001). Team processes are dependent on team size (LePine, Piccolo, Jackson, Mathieu, & Saul, 2008) and the psychological variables we examined may have different means in different companies. Accordingly, team size and company were also included in the model as statistical controls. As tenure had no relevant effects after age was controlled for, tenure was not included as a control to reduce the number of parameters in the model. Control variables were incorporated into our path model as covariates that trait goal orientations and state achievement goals were regressed on.

Modeling Procedures

We estimated the direct and mediated effects that trait LGO and PGO had on the dependent variables, self-efficacy and job performance. Nonindependence of data at the team level (including achievement goals and supervisor ratings) was taken into account by using team identification numbers as a clustering variable in a two-level regression model. Accordingly, a multivariate multilevel regression model (a multilevel path model) was fit to the data using maximum likelihood estimation with robust standard errors (as implemented in the "twolevel" option of Mplus

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5.2; see Muthen and Muthen, 1998–2008). All predictors in this path model were entered grand-mean centered (see, Hofmann and Gavin, 1998). To control for possible confounds, we incorporated equations into the model that regressed trait goal orientations and state achievement goals on the control variables (age, sex, education, company, and team size). Model fit was evaluated primarily based on the root mean square error of approximation (RMSEA). Whether state achievement goals significantly carried the influence of trait goal orientations was assessed within the proposed multiple-mediators path model (see, e.g., Brown, 1997, Preacher & Hayes, 2008). An adequate test that is based on the Delta method (Bollen, 1987) is available within the Mplus software (Muthén & Muthén, 1998–2008). To examine cross-level moderator effects, the approach described in Hofmann and Gavin (1998) was adopted to differentiate between cross-level moderation and between-group effects: individual-level predictors were group-mean centered and the group means of the predictor variables, as well as their interaction term, were included in the regression. Group-mean centering reduces the potential influence of third variables that may characterize work teams. To test cross-level interactions, a random-slopes model was estimated using maximum likelihood with standard errors being approximated by first-order derivatives (as implemented in the "two-level random" option of Mplus 5.2, see Muthén & Muthén, 1998–2008).

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RESULTS

Table 1 presents means and bivariate correlations for all individual-level and team-level measures. Goal concepts were positively correlated with each other (a finding that is in accordance with previous results; see A. J. Elliot & McGregor, 2001; A. J. Elliot & Murayama, 2008). Sociodemographic variables were correlated with trait and state goal concepts, as well as the outcome measures, job-related self-efficacy, and supervisory evaluations. For instance, more educated participants scored higher on trait LGO and state learning achievement goals, and older adults were evaluated less favorably by their supervisors. Accordingly, it was important that we controlled for these variables in all subsequent analyses.

To assess within-group agreement for team-level competition, *rwg* for single-item measures was computed (see, James, Demaree, & Wolf, 1984, 1993). The mean value of *rwg* was .60. Drawing on work by Cohen, Doveh, and Eick (2001) and Dunlap, Burke, and Smith-Crowe (2003), the significance of this value was tested while taking group size, the number of response options, and the number of items used into account. Simulation-based estimates of the expected value and confidence intervals were generated using routines that are implemented in the "multilevel" package of the R environment for statistical computing (R Development Core Team, 2008). Results confirmed that the *rwg* value of .60 for team-level competition indicated significant within-team agreement (95% cutoff value = .57; for an average group size of 9 and a 5-point rating scale). Simulating Average Deviation indices based on the actual data, group size, and the number of response options (see Dunlap et al., 2003) also confirmed that the team-level aggregate variable reached practical and statistical significance ($p < .01$). Note that *rwg*(*j*) values for multiple-item scales that are larger than .70 are conventionally considered to indicate sufficient levels of agreement to indicate that aggregates can be considered a group-level construct. When results were interpreted, the information that

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TABLE 1
Means and Bivariate Correlations for Individual-Level and Team-Level Variables

	M	*SD*	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*11*	*12*
1 LGO	4.11	.58	(.82)	.06	.21	.10	.25	−.04	−.02	−.36**	.26	−.13	−.03	−.10
2 PGO	3.72	.69	.18**	(.75)	−.07	.20	−.20	.12	.04	−.18	−.13	.24	.01	−.06
3 State learning goals	4.12	.60	.36**	.11*	(.78)	.65**	−.16	−.23	−.35**	.36**	.23	−.21	−.20	.85**
5 State performance goals	3.20	.92	.31**	.27**	.47**	(.84)	−.12*	−.18	−.41**	.25	−.09	.12	−.24	.72**
7 Self-efficacy	3.29	.47	.27**	−.10*	.16**	.07	(.64)	−.27	.15	−.13	−.20	.05	.32*	−.29*
8 Job performance	5.22	.96	.05	.01	−.09*	.03	.02	(.92)	.00	−.25	.01	.03	−.24	−.18
9 Sex	1.16	.37	.05	.02	−.07	−.13**	.04	.01		.00	.26*	−.10	.10	−.42**
10 Age	39.22	8.54	−.12**	−.08	.08	.03	−.04	−.21**	−.10*		−.10	.00	−.17	.59**
11 Education	3.57	1.14	.12**	−.09*	.10*	−.04	−.05	.01	.03	−.19**		−.47**	−.22	.10
12 Competition	2.57	1.17	.02	.06	−.03	.18**	−.11*	−.05	−.01	.11*	−.13**		.16	−.12
13 Team size	9.55	4.96												−.34*

Note. $N = 502$ individuals, $k = 55$ teams. Bivariate correlations and two–tailed significance levels. Team-level correlations appear above the diagonal, and individual-level correlations below the diagonal. The diagonal depicts alpha coefficients. LGO = learning-goal orientation; PGO = performance-goal orientation.

$^{**}p < .01$. $^{*}p < .05$.

agreement about team-level competition was significant—but below this standard—was taken into account.

Intraclass correlation coefficients (i.e., ICC(1) values) were calculated to examine between-group variance. ICC(1) yielded a value of .07 for team-level competition, which was significant as indicated by a likelihood ratio test that compared models with and without the intercept term (L.Ratio = 5.30, $p = .020$). That is, 7% of the variability in individual ratings of competition was related to team membership. Bliese (2000) reported that typical ICC(1) values that are found in the organizational literature vary between .05 and .20. The mean within-group reliability for team-level competition was only moderate, making tests of cross-level moderator effects conservative. Moreover, ICCs confirmed that the distinction between trait and state aspects of goals was made successfully. Team members were more similar to each other with regard to their state achievement goals as compared to their trait goal-orientations. Whereas for LGO and PGO only 4.2 % ($p = .027$) and 3.8 % ($p = .043$) of the variation in scale scores originated between teams, ICCs yielded considerably higher values for state learning (ICC1 = .38, $p = .0001$) and state performance achievement goals (ICC(1) = .20, $p < .0001$). These results confirm that we were successful at capturing trait and state goal concepts.

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Fitting a Two-Level Path Model

To examine our hypotheses, we set up a multilevel path model with two levels (teams and individuals). Model fit proved to be very satisfactory for a model that included trait LGO and PGO, state learning and performance achievement goals as mediating variables, and both job-related self-efficacy and supervisory ratings as dependent variables (RMSEA = .04, comparative fit index = .96, Tucker Lewis Index = .90). An alternative theoretical model that included state achievement goals as covariates rather than mediating variables fitted the data less well (RMSEA =.17, comparative fit index = .42, Tucker Lewis Index = .34). Figure 2 presents path coefficients of the multilevel path model we subsequently used to examine how perceived competition and team-level competition are related to state achievement goals. Figure 2 also illustrates that the combined effects of trait LGO and PGO yielded characteristic relationships with state learning and performance achievement goals. Trait LGO facilitated learning (approach) achievement goals. High levels of both trait PGO and LGO were associated with performance (approach) achievement goals. The variance explained in the dependent variables was .24 for state learning achievement goals, .20 for state performance achievement goals, .12 for job-related self-efficacy, and .07 for supervisory evaluations of job performance.

Relationships Between Competition, Achievement Goals, and Self-Efficacy

In a second step, perceived competition and team-level competition were included into the multilevel path model. Results appear in Table 2. Including perceived competition and team-level competition into the model increased the amount of variance explained in state performance achievement goals to .23%. At the group level, team-level competition, company membership, and team size explained 90% of the variance in team means of performance achievement goals, 85% in team means of learning goals, 13% in team means of self-efficacy, and 15% in mean

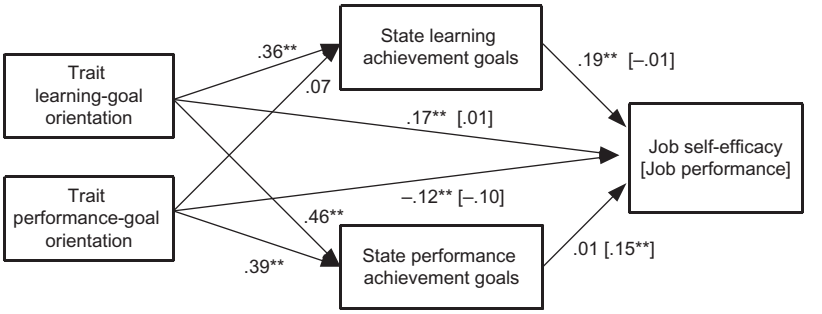

FIGURE 2 Standardized coefficients of a multilevel path model with two outcome measures.
$^{**}p < .01$ (two-tailed p-value).

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job performance. The hypotheses that perceived competition and team-level competition are positively associated with state performance achievement goals (H1a and H1b) received support (see Table 2). However, the relationship between team-level competition and state performance achievement goals was only marginally significant. In addition, and supporting H2a, perceived competition was negatively associated with state learning achievement goals. Team-level competition had no significant direct effect on state learning achievement goals (H2b) but moderated the relationship between trait PGO and learning achievement goals (see below). As expected, perceived competition was negatively associated with job-related self-efficacy (supporting H3a). The relationship between team-level competition and self-efficacy was not significant (H3b), and we dropped this cross-level term from our model.

As person–situation interactions were central to our research question, we examined the interaction of team-level competition and trait PGO in more detail. When entered as a fixed effect, the relationship between trait PGO and state learning achievement goals was not significant (see Figure 2). When entered as a random effect, the variance of this slope turned out to be significant, and we assessed whether team-level competition moderated the relationship between trait PGO and state learning achievement goals. As expected (H4b), whether team-level competition was negatively associated with learning achievement goals depended on individual PGO. That is, competition moderated the relationship between dispositional PGO and state learning achievement goals. Employees with high scores on trait PGO were less likely to adopt learning achievement goals, if high levels of competition prevailed. These relationships existed at both the individual and the team level (see the individual-level and the cross-level interaction terms in Table 2). Figure 3 displays how *team-level* competition moderated the relationship between trait PGO and state learning achievement goals. At high team-level competition, trait PGO was negatively associated with state learning achievement goals. At low levels of competition, by contrast, trait PGO was not or even positively associated with learning achievement goals. A parallel interaction effect occurred between *individual* perceptions of competition and learning achievement goals. Again, perceived competition induced highly performance-oriented participants to focus away from learning achievement goals, whereas employees with lower scores on trait PGO were able to maintain learning achievement goals even in competitive settings. The expectation that perceived competition and team-level competition moderate the relationship between trait PGO and state performance achievement goals (H5a and H5b) did not find support.

TABLE 2
Results of a Multilevel Path Model (Structural Coefficients)

	Dependent Variable					
	Self–Efficacy			*Supervisor Rating*		
	B	*SE*	*p*	*B*	*SE*	*p*
State learning goals	.19	.05	.00**	−.01	.12	.90
State performance goals	.03	.03	.25	.17	.06	.01**
LGO	.17	.03	.00**	−.00	.07	.99
PGO	−.12	.03	.00**	−.07	.07	.28
Age	−.00	.00	.54	−.01	.01	.02*
Educational level	−.04	.02	.03*	.01	.04	.73
Sex (0 = male, 1 = female)	.02	.06	.74	−.02	.11	.83
Perceived competition	−.06	.02	.00**	−.04	.04	.28
Testing indirect effects (predictor/mediator)						
LGO/State learning goals	.07	.02	.00**	−.01	.04	.88
LGO/State performance goals	.00	.02	.77	.07	.03	.01*
PGO/State learning goals[a]	.01	.01	.09	−.00	.01	.88
PGO/State performance goals	.00	.01	.71	.04	.02	.02*
State learning goals ON						
LGO	.37	.03	.00**			
Age	−.01	.00	.00**			
Educational level	.03	.02	.22			
Sex (0 = male, 1 = female)	.09	.05	.05			
Perceived competition	.00	.02	.96			
Perceived competition × PGO	−.06	.02	.00**			
Team-level competition	−.51	.62	.42			
Team PGO	−.32	.43	.45			
Team-level competition × team PGO	.13	.16	.78			
Team size	.01	.00	.17			
Company	.43	.02	.00**			
State performance goals ON						
LGO	.43	.06	.00**			
PGO	.29	.04	.00**			
Age	−.01	.00	.00*			
Educational level	−.04	.04	.26			
Sex (0 = male, 1 = female)	−.16	.07	.02*			
Perceived competition	.12	.04	.00**			
Team-level competition	.14	.09	.10			
Team size	−.01	.01	.36			
Company	.44	.04	.00**			
Cross-level moderation						
Random slope (between PGO and state learning goals) ON						
Team-level competition	−.23	.07	.00**			

Note. Multivariate multilevel regression with teams as clustering variable ($n = 502$ individuals, $k = 55$ teams). Right-hand dependent variables are job-related self-efficacy and supervisory ratings of job performance. State learning and performance achievement goals act as mediating variables. ON = the ON statement indicates that the dependent variable preceding the statement is regressed on the predictors listed below; LGO = learning-goal orientation; PGO = performance-goal orientation.

[a]This indirect effect was estimated in a model that did not include the random effect between PGO and state learning achievement goals.

*$p < .05$. **$p < .01$.

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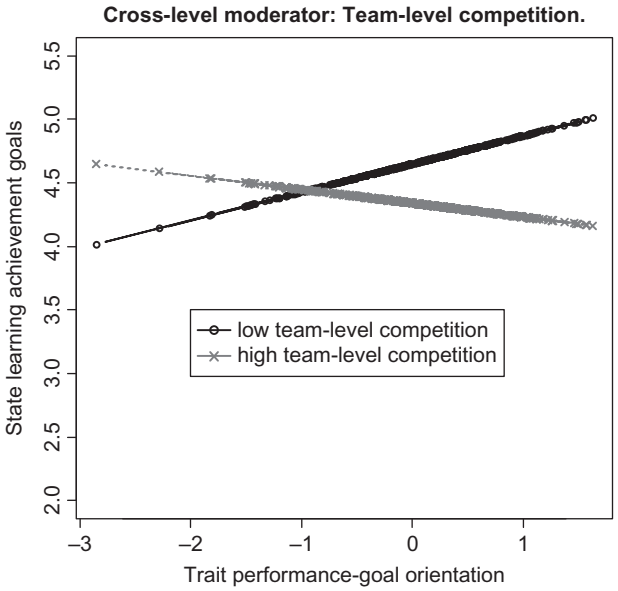

FIGURE 3 Trait performance–goal orientation and team–level competition.

Note. The plot represents the relationship between trait performance–goal orientation and state learning achievement goals, controlling for all other terms in the model (see Table 2). $N = 502$ individuals, $k = 55$ teams.

Relationships Between State Achievement Goals and Outcome Measures

As expected, state learning achievement goals were positively associated with *job-related self-efficacy* (H6). In addition, trait LGO had direct and indirect effects on self-efficacy through its positive relationship with state learning achievement goals. Supporting H7, state performance achievement goals were positively related to *supervisory ratings of job performance* (Table 2). Performance achievement goals mediated the influence that trait PGO and LGO had on supervisory ratings (see the significant indirect effects in Table 2). That is, whereas learning achievement goals played an important role in predicting job-related self-efficacy, performance achievement goals positively predicted supervisory appraisals. Conceiving of state achievement goals as mediating states seemed to be well justified as indicated by a test of significance for all indirect effects (see Table 2, "testing indirect effects"). Note that the significance of indirect effects was assessed within the multiple-mediators path model (for a discussion, see Brown, 1997; Preacher & Hayes, 2008). Finally, to assess the effects that control variables had on our results, we repeated our analyses without statistical controls (age, sex, education, team size, and company). Results suggest that our conclusions regarding all hypotheses were independent of whether control variables were taken into account (for a discussion of control variables in organizational research, see Becker, 2005). Bivariate correlations between controls and other variables appear in Table 1.

In summary, perceived competition among team members was positively associated with state performance achievement goals, and negatively associated with self-efficacy beliefs. Whether team-level competition was negatively related to learning achievement goals depended on trait

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PGO. Highly performance-oriented individuals focused away from learning achievement goals, in competitive settings. Among highly performance-oriented individuals, the net effects that team-level competition had on job-related self-efficacy were negative. In conclusion, whether competition within teams has desirable effects depended on individual dispositions and on whether desired outcomes are predicted by performance or learning achievement goals.

DISCUSSION

This study examined how team-level competition is related to workplace achievement goals in a heterogeneous sample of employees. That is, we linked perceptions of competition within teams to motivational processes that may explain why competition is associated with outcome measures, such as job-related self-efficacy and supervisory evaluations of job performance. Adopting a person–situation–interaction perspective, we investigated whether team-level competition was associated with state achievement goals even after individual motivational dispositions were taken into account that may largely explain state achievement goals. We considered that situational factors may affect individuals differently. The interplay of individual and team-level perceptions of competition with trait PGO determined state achievement goals.

Although (mal)adaptive effects of goal orientations (see, e.g., Farr, Hofmann, & Ringenbach, 1993; VandeWalle et al., 2000) and achievement goals (Payne et al., 2007) are much researched, only a few articles have examined how contextual factors in the work environment interact with individual goal orientations (Hirst et al., 2009; Shalley et al., 2004). Research has provided evidence that goal orientations become most relevant for performance, if corresponding situational factors are present. Chen and Mathieu (2008), for instance, reported that a learning-goal orientation predicted skill acquisition more positively when it was coupled with a complementary situational inducement, namely self-referenced rather than normative performance feedback. Jagacinski et al. (2001) found that perceived ability was more strongly related to performance, if ego-involving rather than task-involving instructions were provided. A learning orientation, in contrast, was related to performance more strongly, if task-involving instructions were provided. Within a similar framework, we examined relationships between team-level competition and state achievement goals while considering individual differences in dispositional goal orientation. Our results suggest that competition in teams provides situational cues to team members that activate the expression of trait PGO. Dispositional PGO influenced state learning achievement goals most strongly, if competition encouraged the expression of this trait. Participants who scored low on trait PGO were more likely to maintain learning achievement goals, even if they were members of a competitive team. That is, those who scored low on trait PGO were better able to maintain goals that promote learning in a competitive environment. By contrast, those who scored high on trait PGO strongly focused on performance goals, while they focused away from learning goals, in competitive settings.[1]

[1]As predicted, competition interacted with the "corresponding" motivational trait, PGO. Whether an interaction occurred between competition and the "noncorresponding" disposition, LGO, was tested to rule out that an unexpected but actually significant effect was overlooked. This finding is in accordance with the notion that contextual factors encourage the expression of corresponding traits. Note also that competition did not moderate the direct relationships between the two dimensions of trait goal orientation and the dependent variables (self-efficacy, supervisory ratings), nor the relationships between state achievement goals and the dependent variable, which was tested in an exploratory fashion.

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In our study, perceived competition had direct and mediated negative relationships with job-related self-efficacy. To explain why perceived competition within teams was negatively associated with self-efficacy beliefs, we referred to the negative implications that social comparisons have for positive self-evaluations in competitive settings (Chan & Lam, 2008; Stapel & Koomen, 2005). Other research has found cooperative rather than competitive goals to foster a problem-solving orientation among team members (Tjosvold, Yu, & Hui, 2004). There is evidence that interpersonal behavior and cognitive variables mediate the effects that cooperation and competition have on outcome measures (Chen & Tjosvold, 2002; Tjosvold & Yu, 2004). For instance, learning from mistakes and "constructive controversy" among team members were found to carry the positive effects that cooperative group goals had on productivity and creativity in teams (Lu et al., 2010). Our results may contribute to previous findings in that they point to underlying motivational processes. We found competition within teams to be associated with state achievement goals, even after dispositional goal orientations were controlled for. State achievement goals carried the indirect effects that competition had on job-related self-efficacy beliefs and job performance. In agreement with research that has been conducted in educational settings (Lam at al., 2004) we found that competition in teams was positively associated with state performance achievement goals. At the same time, competition was negatively related to learning achievement goals. This finding suggests that competition within work teams can negatively affect a highly desirable class of achievement goals. Learning achievement goals are important predictors of task-specific self-efficacy and outcomes that require learning (Ford et al., 1998; Payne et al., 2007; Phillips & Gully, 1997). An underlying mechanism that may explain these findings is that individuals comply with situational cues and adopt achievement goals that match with these cues. Indeed, intraclass correlations of state achievement goals within teams confirmed that team membership had a substantial influence on individual achievement goals. In his theory of cooperation and competition, Deutsch (1949) maintained that competition is related to the perception that individual goal attainment is negatively correlated with others' goal attainment. As a result, competition within teams may make normative or other-referenced standards for achievement salient. Our results suggest that complying with the situational demands of competitive settings implies that employees become more likely to adopt performance achievement goals, while they may focus away from learning achievement goals.

Finally, whether team-level competition is likely to have desirable effects depended on the implications that different classes of achievement goals have for different outcome measures. We provided some evidence that competition can have maladaptive effects if desired outcomes are positively associated with state learning achievement goals. In contrast, if outcomes are positively associated with performance goals, and less dependent on learning goals, competition may promote performance. We found that state performance goals predicted higher supervisory ratings of job performance, a finding that is in line with the assumption that performance-goals facilitate performance in the presence of others. After all, performance-oriented individuals aim (by definition) to evoke positive evaluations in others (Dweck, 1986; Dweck & Leggett, 1988; Dweck & Wortman, 1982). However, we acknowledge that the relationships we found between state achievement goals and supervisory evaluations may yield different results in other samples. Whether supervisors positively evaluate behavior that is related to learning or performance achievement goals may depend on work tasks as well as organization-level goals (Van Yperen, 2003). Unlike supervisory ratings, job-related self-efficacy was positively related to learning achievement goals. Self-efficacy beliefs are presumed to mediate the effects that achievement

goals have on desired outcomes (Potosky & Ramakrishna, 2002). If competition leads individuals to focus away from learning goals, competition may inhibit performance in tasks that require learning (cf. Lam et al., 2008).

Finally, we like to conclude that a model that incorporates multiple goals contributed to understanding the complex effects that team-level competition had on individual achievement goals. Our model incorporated trait goal orientations as antecedents of workplace achievement goals. In a (multilevel) path model, we examined the independent and interactive effects that trait goal orientations had on state achievement goals. That is, our model acknowledged that individuals may pursue multiple goals, wherein the effects that are associated with trait goal orientations depend on their combination. LGO and PGO have been found to be independent traits (Nicholls et al., 1989), or to yield even positive correlations (Harackiewicz, Barron, & Elliot, 1998). Several other researchers have suggested that the combined effects of both dimensions of goal orientation, LGO and PGO, need to be considered to understand their effects (Harackiewicz et al., 1997; Pintrich, 2000). In accordance with these authors, we found trait PGO to be more or less adaptive depending on the level of trait LGO. PGO was associated with performance achievement goals, if it was coupled with high levels of LGO. In conclusion, high levels of trait LGO seemed to be generally associated with adaptive effects, whereas trait PGO had adaptive or maladaptive effects depending on the level of trait LGO. Based on our results, we would predict that individuals who endorse both, high levels of LGO and PGO, fare well in competitive work environments. Competition should affect those most negatively who endorse high levels of PGO and low levels of LGO.

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Limitations and Conclusions

Our results are limited due to features of the sample that we studied. Participants were predominantly male, which may have affected our results (although we controlled for gender). Furthermore, our sample was heterogeneous in terms of the type of job that participants occupied and the level of qualification required. Although this increases the generalizability of our results across various work settings, it made recording specific sources or dimensions of competition difficult. As a consequence, our study was limited in that it assessed global perceptions of team-level competition. The use of aggregate scores to operationalize team-level competition was also not without problems. Team-level competition yielded significant but only moderate agreement indexes. However, this may in itself be an informative research finding. Competition may partly pertain to individual perceptions rather than a work team as a whole. Accordingly, we incorporated competition into our model as a contextual effect (an aggregate of individual reports) as well as an individual-level variable. Another limitation arises due to the use of cross-sectional data. We acknowledge that a longitudinal design is required to assess causal relationships between motivational concepts and level of competition. Our results demonstrate that competition in teams is related to the type of achievement goals that team members adopt, while inference on causality is not appropriate.

The findings presented in this article demonstrate that team-level competition is related to state performance and learning achievement goals. State achievement goals, in turn, predicted job-related self-efficacy and supervisory ratings of job performance. Therein, and in line with previous work, we focused on approach achievement goals. Future research may examine the effects that contextual factors in teams have on avoidance achievement goals. Other motivational

dispositions than LGO and PGO may also be considered that are related to whether individuals adopt approach or avoidance achievement goals. We like to conclude that a good match between individual goal orientations and contextual factors may be considered a dimension of person–environment fit. Promoting person–environment fit with regard to individual goal orientations can help to arrange for work environments that foster workplace learning and job performance. Whether competition has desirable effects depends on whether the tasks at hand are facilitated by learning or performance achievement goals. Competitive environments may promote learning and creativity only if those who are to perform in them have a strong disposition to adopt learning goals.

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