

RESEARCH REPORT

The Effect of Goal Setting on Group Performance: A Meta-Analysis

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Updating and extending the work of O’Leary-Kelly, Martocchio, and Frink (1994), with this meta-analysis on goal setting and group performance we show that specific difficult goals yield considerably higher group performance compared with nonspecific goals ($d = 0.80 \pm 0.35, k = 23$ effect sizes). Moderately difficult and easy goals were also associated with performance benefits relative to nonspecific goals, but these effects were smaller. The overall effect size for all group goals was $d = 0.56 \pm 0.19$ ($k = 49$). Unexpectedly, task interdependence, task complexity, and participation did not moderate the effect of group goals. Our inventory of multilevel goals in interdependent groups indicated that the effect of individual goals in groups on group performance was contingent upon the focus of the goal: “Egocentric” individual goals, aimed at maximizing individual performance, yielded a particularly negative group-performance effect ($d = -1.75 \pm 0.60, k = 6$), whereas “groupcentric” goals, aimed at maximizing the individual contribution to the group’s performance, showed a positive effect ($d = 1.20 \pm 1.03, k = 4$). These findings demonstrate that group goals have a robust effect on group performance. Individual goals can also promote group performance but should be used with caution in interdependent groups. Future research might explore the role of multilevel goals for group performance in more detail. The striking lack of recent field studies in organizational settings that emerged from our brief review of trends in group goal-setting research should be taken into account when designing future studies in this domain.

Keywords: goal setting, groups, teams, meta-analysis, group performance

Goal-setting theory (GST) is a well-established motivation theory, as evidenced by a large body of research and widespread application of goal-setting principles in organizational practice. The main GST premise is that encouraging people to pursue a goal that is specific and difficult will yield better performance than encouraging them either to pursue a specific but easy goal or to simply do their best (Locke & Latham, 1990). Numerous studies, mainly focusing on individuals, have generated additional insights into goal-setting mechanisms and boundary conditions. Specific difficult goals have been shown to enhance individual performance by directing attention toward desired end states, mobilizing effort and persistence, and encouraging the development and use of task strategies. The goal-setting effect has been shown to depend, at least in part, on factors such as goal commitment, task complexity, and feedback (e.g., Latham, Locke, & Fassin, 2002).

No matter how well established, GST as an individual motivation theory is not entirely aligned with current organizational

practice, in which individual jobs are giving way to teamwork (Kozlowski & Bell, 2003). This observation inspired new research, examining goal setting in work groups. O’Leary-Kelly, Martocchio, and Frink (1994) conducted the only published meta-analysis on goal setting in groups, reporting a large positive effect of group goals on group performance ($d = 0.92, k = 26$). They derived this effect by comparing the performance effect of group goals with the effect of “no goals or low goals” (O’Leary-Kelly et al., 1994, p. 1289). Group goals included specific goals as well as goals for which “the extent of goal specificity could not be determined” (O’Leary-Kelly et al., 1994, p. 1294) and goals of varying difficulty. Although this meta-analysis provided valuable insight into the effect of group goals in general, it did not reflect the performance effect of *specific difficult* goals compared with goals that are either nonspecific or easy, and thus provided no comprehensive test of the core goal-setting principles. Moreover, the qualitative moderator analysis of O’Leary-Kelly et al. (goal specificity, goal difficulty, participation, task interdependence, subject type, lab vs. field setting, group type, time) yielded inconclusive results. We therefore report a new meta-analysis on goal setting in groups, providing a comprehensive up-to-date assessment of the effect of specific difficult group goals on group performance. We include a quantitative analysis of the moderators in O’Leary-Kelly et al., adding task complexity, a key moderator in goal-setting theory. Finally, we examine the effect of individual goals on group performance, because groups are multilevel goal environments (e.g., DeShon, Kozlowski, Schmidt, Milner, & Wiechmann, 2004) where goals can be set for the group as a whole as well as for individual group members.

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Goal Setting in Groups: Group Goal Specificity and Difficulty

GST rests on two core principles: Specific difficult goals yield higher performance than nonspecific (“do-your best”) goals, and specific difficult goals yield higher performance than specific easy goals. Goal specificity reflects the extent to which a goal indicates a specific performance standard and is primarily associated with reduced *variance* in performance (Locke, Chah, Harrison, & Lustgarten, 1989). Difficult goals initiate goal striving by directing attention, mobilizing effort and persistence, and encouraging development and use of task strategies. Even though the criteria for what constitutes a difficult goal are surprisingly unclear (e.g., Mitchell, Thompson, & George-Falvy, 2000), meta-analyses consistently have supported the superiority of specific difficult goals to nonspecific difficult goals and easy goals for individual tasks (e.g., Mento, Steel, & Karren, 1987). The two core GST principles are commonly expected to generalize to the group level, even though the underlying mechanisms are more complex. Specific difficult group goals have also been found to motivate groups by directing attention, mobilizing effort and persistence, and encouraging development and use of task strategies that facilitate goal attainment. In addition, group goals trigger unique motivational mechanisms such as planning, cooperation, morale-building communication, and collective efficacy (e.g., Weldon & Weingart, 1993). We therefore hypothesize that the GST principles also hold for specific difficult group goals:

Hypothesis 1: Specific difficult group goals yield higher group performance than (a) nonspecific goals and (b) specific easy group goals.

Because goal specificity has been associated with performance variability rather than absolute performance (Locke et al., 1989), we include no hypothesis for the performance effect of goal specificity. We report a comparison of specific to nonspecific goals to illustrate the overall effect of specific group goals on group performance.

Moderators of the Group-Goal Effect

Task Interdependence

Task interdependence (TI) is a defining characteristic of group work and a contingency factor for the emergence and outcomes of many group states and processes (e.g., Kozlowski & Bell, 2003). It refers to the degree to which group members have to share or exchange information, materials, or expertise to achieve the desired group performance (Van der Vegt, Emans, & Van der Vliert, 1998). TI is commonly divided into four levels (Van de Ven, Delbecq, & Koenig, 1976): pooled (independent workflow; e.g., a call center), sequential (one-way workflow; e.g., an assembly line), reciprocal (two-way workflow; e.g., a multidisciplinary team of medical specialists diagnosing patients), and intensive (simultaneous multidirectional workflow; e.g., a surgical emergency room team). The actual level of TI that is achieved during task execution depends on the interplay of external design choices (e.g., group composition, work instructions) and internal process choices (e.g., task strategies, communication preferences; Wageman, 1995). We

expect TI to moderate the effect of specific difficult goals on group performance, such that this effect is strongest when TI is high. Group goals emphasize collective outcomes, thus encouraging group members to use cooperative task strategies and facilitating the exchange that is required for successful performance when TI is high (cf. Jewel & Reitz, 1981). When TI is low, group goals may overemphasize cooperation—not critical for such tasks—and/or promote social loafing (i.e., individual performance is not emphasized or encouraged; Hertel, Kerr, & Messé, 2000), thus causing efficiency losses.

Hypothesis 2: Task interdependence moderates the effect of group goals on group performance such that the effect becomes stronger with increasing levels of task interdependence.

Task Complexity

Task complexity (TC) involves three aspects of a task: the number of acts and information cues (component complexity), the number of relationships among acts and cues (coordinative complexity), and changes in acts and cues and their relationships (dynamic complexity; Wood, 1986). TC is a well-established moderator of the goal–performance link at the individual level: The more complex the task, the smaller the goal-setting effect (Wood, Mento, & Locke, 1987). For simple tasks, goals affect performance mainly via motivational mechanisms, while complex tasks require the discovery and implementation of effective task strategies. Because individuals do not always succeed in identifying and adopting effective strategies, the effects of goals would be less pronounced for complex tasks.

On the basis of Wood (1986), we define group TC as a combination of the component, coordinative, and dynamic complexity of the task that is assigned to a group, regardless of how the group actually carries out the task (e.g., allocation of subtasks, TI). As such, we consider TC and TI as relatively independent constructs. For example, carrying out this meta-analysis is a highly complex group task (cf. Wood et al., 1987), irrespective of how the subtasks—ranging from complex (e.g., doing the actual analyses) to simple (e.g., compiling the reference list)—are distributed among the researchers. The task itself is highly complex, but the team could minimize TI by dividing the work into subtasks that each member can complete more or less independently.

Analogous to the role of individual TC, we expect that group TC moderates the group goal–performance relationship. For simple group tasks, groups know what must be done to achieve their goals so that a specific difficult group goal can mobilize sustained collective effort that directly increases the chances of goal attainment. For complex tasks, the optimal path to performance often is not apparent and requires planning and strategy. The focus on results that is induced by specific difficult goals may also prevent the group from investing in planning and strategy development, thus reducing the intended performance enhancement.

Hypothesis 3: Task complexity moderates the effect of group goals on group performance, such that this effect decreases as tasks become more complex.

Participation

Participation in decision making (PDM) refers to influence sharing among supervisors and subordinates (Mitchell, 1973) and is associated with performance gains via cognitive (e.g., increased communication) and motivational mechanisms (e.g., commitment to decisions; Wagner, Leana, Locke, & Schweiger, 1997). Although in the PDM literature participation in goal setting (PGS) is often expected to enhance goal-setting effectiveness, research mostly yields weak, inconsistent effects of PGS. Reduced effectiveness is supported only for “tell” style goals (authoritarian, without rationale), while “tell-and-sell” style goals (supportive, with a rationale) and PGS show similar effects (Latham, Erez, & Locke, 1988; Wagner, 1994).

Regarding participation in groups, a meta-analysis (Wagner & Gooding, 1987) revealed a weak, nonsignificant positive relation between PDM and group performance. Moreover, Sagie (1994) reported similar effects for participation and tell-and-sell decision-making strategies that were both superior to a tell strategy. PGS and tell-and-sell goal setting thus seem to result in higher group performance, probably because they yield similar cognitive and motivational benefits, while a tell approach appears to undermine group performance, which may be due to, for example, lower commitment and less information sharing. Therefore, we hypothesize the following:

Hypothesis 4: Participation moderates the effect of group goals on group performance such that this effect is stronger for group goals that are set through “tell-and-sell,” participation, or delegation than for goals set in a “tell” manner.

Study Type

Individual GST generalizes quite well from lab to field (Latham & Lee, 1986). This has not yet been examined for groups, so we report separate results for lab and field studies.¹

Multilevel Goals in Groups

Groups are multilevel goal systems where goals can be set for the group as a whole and/or for the individual members. Only few studies have addressed the effects of individual goals (IGs) on group performance. An exception is the work of Crown and Rosse (1995), who introduced a distinction between *egocentric* and *groupcentric* IGs. Egocentric IGs focus on maximizing individual performance (e.g., realize individual result X), which increases commitment to individual performance and the likelihood of competitive strategies. Groupcentric IGs (e.g., contribute X to the group result) focus on maximizing the individual contribution to the group, which increases commitment to group performance and the likelihood of cooperative task strategies. Crown and Rosse argued that for interdependent tasks IGs can help or hinder group performance depending on their focus. For independent (pooled) tasks, group performance is defined as the sum of all group members' individual performances. For such tasks, individual performance (the focus of egocentric IGs) equals the individual contribution to the group (the focus of groupcentric IGs), so that both types of IG may be expected to increase individual motivation and performance, which will directly increase group performance.

However, for interdependent group tasks, individual and group performance are not directly related, and successful group performance requires cooperation and alignment of individual efforts. An egocentric IG may now prevent members from investing in the group process, because they have no direct interest in group performance gains. An egocentric IG may even evoke competitive strategies, for example when resources are scarce or when IG attainment is competitively rewarded. As such, the motivational and cognitive effect of the egocentric IG might still increase individual performance but, relative to nonspecific goals, will tend to undermine group performance, which is our current focus. A groupcentric IG for interdependent tasks, on the other hand, will focus group members' attention on their individual contribution to the group. To maximize this contribution, group members will need to cooperate and align efforts, thus promoting group performance relative to nonspecific or no goals. We thus hypothesize the following:

Hypothesis 5: For interdependent group tasks, (a) egocentric individual goals are associated with lower group performance and (b) groupcentric individual goals are associated with higher group performance compared with nonspecific goals.

Method

Literature Search and Inclusion Criteria

To locate relevant studies we (1) inspected all studies from the O'Leary-Kelly et al. (1994) meta-analysis ($n = 10$) and narrative review; (2) searched PsycINFO, ABI/Inform, and Scopus for publications up to May 2009 (search terms: *group/team, performance/efficiency/effectiveness, goal[s]/target[s]/goal-setting*); (3) scanned literature reviews; (4) scanned all reference lists of the publications in our sample; (5) examined all publications that cited O'Leary-Kelly et al.; (6) searched databases for unpublished dissertations and theses; (7) posted on the Academy of Management Organizational Behavior Division Listserv; and (8) contacted 10 leading authors to retrieve unpublished research.

This search yielded 131 studies, which we subsequently assessed on their relevance to the content domain and availability of information. Examination of the full-text manuscripts revealed that 93 publications, listed in Appendix B, could not be included for one or more of the following reasons: (1) no measurement or manipulation of outcome goal difficulty or specificity; (2) required statistical data could not be retrieved; (3) no pretest or control group available; (4) multiple interventions, possible confounding of goal effects; (5) study did not involve goal setting in groups; and (6) not an empirical study. Five of the studies in O'Leary-Kelly et al. were excluded due to lack of a clear group goal intervention (Anderson, Crowell, Doman, & Howard, 1988; Lee, 1989) and/or

¹ O'Leary-Kelly et al. (1994) differentiated among group type (newly formed vs. preexisting), subject type (students vs. organizational members), and time (short-term vs. ongoing tasks). These factors largely overlap with the lab and field distinction, because lab studies typically include newly formed student groups, working on time-restricted tasks, whereas field studies concern existing groups in organizations, working on ongoing tasks. Our sample showed very few exceptions to this pattern, so we did not include a separate assessment of subject type, group type, or time.

unavailability of required data (e.g., Buller, 1988; Buller & Bell, 1986; Smith, Locke, & Barry, 1990). Our final sample included 38 studies: 30 published journal articles (containing 33 studies), one book chapter, one submitted paper, two unpublished doctoral dissertations, and one unpublished manuscript. Together, these studies yielded 76 independent effect sizes.

Coding of Goal Specificity and Difficulty

Goal specificity reflects the extent to which a goal suggests a precise target. It typically varies from vague (e.g., “go ahead,” “do your best”), via moderately specific, indicating a range of acceptable performance levels (e.g., “generate between 8 and 12 uses for a coat hanger”), to specific goals (e.g., “generate 10 uses for a coat hanger”; cf. Locke et al., 1989). Any appropriate test of the main premise of GST involves specific goals, and all studies in our sample included specific goals (no studies used moderately specific goals). These specific goals are typically compared with vague or no goals (i.e., “work as usual,” no intervention).

Most articles in our sample stated that difficult, moderately difficult, or easy goals were set. However, very few provided a definition in terms of attainment percentages, and only a minority verified whether the goals actually operated as intended. Therefore, to create a consistent index of *goal difficulty*, we used quantitative data about control group, pretest, or pilot test performance ($k = 32$). We used the following classification: (1) difficult goal: pretest/control group/pilot test performance at least 1 *SD* lower than the goal (goal attainment $\leq 15\%$); (2) moderately

difficult goal: pretest/control group/pilot test performance less than 1 *SD* lower than the goal (goal attainment 15%–50%); (3) easy goal: pretest or control group performance at least equal to the goal level (goal attainment $\geq 50\%$). When this information was not available, we used other information (e.g., qualitative information about a pilot test, $k = 8$, or attainment percentages in the experimental condition, $k = 5$, or for all conditions combined, $k = 1$). Two publications ($k = 3$) provided no information from which goal difficulty could be inferred. These studies were removed from all analyses requiring an estimate of goal difficulty but were retained for analyses involving all specific goals.

Coding of Moderators

The first and second authors independently coded all studies, yielding high agreement (TI: $r = .84$, independent vs. dependent $\kappa = 1.00$, four categories $\kappa = .71$; TC: $r = .96$, three categories $\kappa = .84$; participation: $\kappa = .78$). We discussed differences and reached agreement on the appropriate codes. Examples of coding decisions are provided in Table 1, and an overview of all codes is given in Appendix A, Table A1.

TI. To code TI, we used a 7-point scale with four anchors: *pooled* (1), *sequential* (3), *reciprocal* (5), and *intensive* (7). Values in between represent mixed forms of TI (e.g., reciprocal with intensive aspects). Estimates were based on descriptions of *actual* teamwork patterns, determined by characteristics of the group task and process choices made by the groups. We also distinguished between independent (1.0–2.0) and interdependent (2.5–7.0) tasks.

Table 1
Examples of Coding, Based on Available Information in Publications

Task interdependence	Task complexity	Participation
POOLED (1.0–2.0): Individually creating and recording a succession of color patterns using colored cubes (Larson & Schaumann, 1993; coded 1).	LOW (1.00–2.75): As a group, participants had to find and write down individually as many different uses for common objects (e.g., a pocket lamp) as they could (Wegge & Haslam, 2005; coded 2).	TELL: In the assigned goal condition, a specific, challenging goal for group performance was assigned. To prevent spontaneous competition in this condition, groups were not told how this goal was derived (Mulvey & Ribbens, 1999).
SEQUENTIAL (2.25–4.00): Three-person groups composing three-word sentences, using a work sheet that is passed between members (e.g. A to B to C; Gowen, 1985; coded 3).	MODERATE (3.00–4.75): Participants worked in groups of three to build abstract structures using materials such as Styrofoam balls, popsicle sticks, aluminum foil, a needle, and thread. Building the structure required 26 acts (e.g., gluing macaroni to a stick), 11 of which were unique, and these acts included seven precedence requirements (Weldon, Jehn, & Pradhan, 1991; coded 3.75).	TELL-AND-SELL: Groups were instructed as follows: “To make money typically requires groups to think strategically. Hence, it is important that this group commits to a specific, difficult yet attainable goal to make money. In previous sessions, the average amount of money that groups made was \$31.00. Therefore, this group’s goal is to think of ways to make \$31.00 or more” (Seijts & Latham, 2000).
RECIPROCAL (4.25–5.75): Three-person groups carrying out the unusual uses brainstorming task, using connected computers to send and receive messages and store ideas; no verbal communication allowed (Miura, 2003; coded 4.5).	HIGH (5.00–7.00): Teams of three to five nurse surveyors working together to plan the inspection of homes for the developmentally disabled, perform the inspections, and write a report to document their findings (Weldon & Yun, 2000; coded 5).	PARTICIPATION: The foremen asked workers to set a goal. If the goal selected was reasonable, the foremen commented on the acceptability of the goal and placed it on a graph. If the goal was too easy or too difficult, the foremen asked the workers to try again (Fellner & Sulzer-Azaroff, 1985).
INTENSIVE (6.00–7.00): Holding a 6-kg medicine ball aloft at shoulder level on a platform created by the hands of three persons, with fingertips touching but not overlapping (Bray, 2004; coded 7).		DELEGATION: Team members discussed and chose two simultaneous goals for the test quiz. The discussion was led by the experimenter, and the leader had no distinct role in the goal-setting process (Sagie, 1996).

For five studies (13 effect sizes) TI could not be coded due to large within-study variation in TI or lack of information.

TC. To assess TC, we related authors' task content descriptions to the Wood et al. (1987) TC scale for individual tasks: 1 (e.g., reaction time), 2 (e.g., brainstorming), 3 (e.g., anagrams), 4 (e.g., sewing machine work), 5 (e.g., college course work), 6 (e.g., technician work), and 7 (e.g., science & engineering). In line with Wood et al. we reduced these scores to three categories: *low* (1–2.75), *moderate* (3–4.75), and *high* (5–7) complexity. TC was not significantly related to TI ($r = .10, ns$).

Participation. Participation was coded with Heller's (1971) typology of participation in decision making: 1 = *tell* (assigned without rationale); 2 = *tell-and-sell* (assigned with rationale); 3 = *consultation* (leader/experimenter consults group and then decides); 4 = *participation* (joint decision of group and leader/experimenter); 5 = *delegation* (self-set goal, group decides). Our sample did not include any studies that used consultation as the goal-setting method.

Study type. We distinguished between laboratory and field studies.

Coding of Individual Goals

First, we coded studies that included individual goal setting in groups for TI. All studies involved interdependent tasks. We then coded for egocentric and groupcentric IGs ($k = 10, \kappa = 1.00$, see Appendix A, Table A3). IGs were coded as egocentric when the goal manipulation involved maximizing individual results (e.g., "construct seven words [on your individual word list]") and as groupcentric when the goal manipulation involved a contribution to the group outcome (e.g., "contribute 17 letters to the group's final sentences"; Crown & Rosse, 1995, p. 143). Some studies allowed for an indirect assessment through examination of a measure of commitment to maximizing individual versus group performance (e.g., Crown & Rosse, 1995; Van Mierlo & Kleingeld, 2010). All IGs were assigned goals and were identical for all group members. In five studies, the IG was combined with a group goal, for example, "contribute 17 letters to the group's final sentences" (groupcentric IG) combined with "construct five sentences, each with at least one three-letter word from each group member" (group goal; Crown & Rosse, 1995, p. 143).

Statistical Analysis

The main effect size index used in this meta-analysis is Cohen's d , which represents the difference between the means of two groups divided by the pooled within-group standard deviation. We calculated pooled mean effect sizes with the random effects model, explicitly taking into account heterogeneity across the studies (Schmidt, 2008). The study weights in the random effects analysis are the inverse of the sum of the within-study variances plus the between-study variance. This represents the Hedges-Vevea approach (Hedges & Vevea, 1998), which is recommended when d is used as the effect size index (Marín-Martínez & Sánchez-Meca, 2010). The effect sizes were independent: One effect size was calculated per condition. One study used multiple performance measures (Sagie, 1996), which we combined into one overall measure to retain independence of the effect sizes. When multiple trials were used, these were combined into one effect size. Anal-

yses were carried out with Biostat's Comprehensive Meta-Analysis program (Borenstein, Hedges, Higgins, & Rothstein, 2005).

Results

Table 2 shows effect sizes and moderators for the comparison of specific group goals to nonspecific goals, for all specific goals ($k = 49$), and for the subset of specific difficult goals ($k = 23$). Table 3 shows separate effect sizes for laboratory and field studies. The overall mean effect on group performance of specific group goals compared with nonspecific goals was significant ($d = 0.56 \pm 0.19, k = 49, p < .001$). Some heterogeneity existed, indicated by an 80% credibility interval that includes zero $[-0.29, 1.41]$ as well as a significant homogeneity statistic, $Q(48) = 146.0, p < .001$. In line with Hypothesis 1a, the mean effect on group performance of specific difficult group goals compared with nonspecific goals was significant ($d = 0.80 \pm 0.35, k = 23, p < .001$). Some heterogeneity was indicated by an 80% credibility interval that includes zero $[-0.30, 1.90]$ as well as a significant homogeneity statistic, $Q(22) = 101.8, p < .001$. Furthermore, in line with Hypothesis 1b, specific difficult group goals yielded higher group performance than specific easy group goals, $d = 0.80 \pm 0.35, k = 23$ vs. $d = 0.23 \pm 0.22, k = 8; t(28.81) = 2.70, p = .012$. Goals that were moderately difficult or easy were also associated with significantly higher group performance compared with nonspecific goals (easy: $z = 2.07, p = .04$; moderate: $z = 3.65, p < .001$). The effect of moderately difficult group goals on group performance ($d = 0.53 \pm 0.29, k = 15$) did not differ significantly from the effect of easy or difficult goals. A separate analysis of the goal-difficulty effect, including 17 effect sizes from experimental studies that specifically compared the effect of difficult to easy goals and from correlational studies relating self-set group goal difficulty to group performance (see Appendix A, Table A2), yielded a significant overall effect, $r = .38$ (95% confidence interval: $[.23$ to $.52]$, $p < .001$), offering additional support for Hypothesis 1b. These results show that goal difficulty moderates the effect of specific group goals on group performance: The more difficult the goal, the stronger the effect. Table 3 shows that the laboratory-field distinction did not moderate the specific group goal effect (lab: 0.51 ± 0.20 , field: 0.71 ± 0.44 ; $Q[1] = 0.65, p = .42$) or the specific difficult group goal effect (lab: 0.68 ± 0.36 , field: 1.51 ± 1.23 ; $Q[1] = 1.63, p = .20$).

Contrary to Hypothesis 2, TI did not moderate the effect of specific group goals on group performance, $d = 0.82 \pm 0.39$ and $d = 0.56 \pm 0.29$, for independent and interdependent tasks, respectively, $Q(1) = 1.10, p = .30$, and a regression analysis showed no significant relation between TI and the effect size for group goals ($\beta = -.09, p = .17$). The same result emerged when considering only specific difficult goals, $Q(1) = 0.92, p = .34$, and when considering the four levels of TI, $Q(3) = 2.70, p = .44$.

Hypothesis 3 also was not supported: Group performance did not differ significantly across simple, moderately complex, and complex tasks, $d = 0.50 \pm 0.18, d = 0.52 \pm 0.32$, and $d = 0.94 \pm 0.86$, respectively (see Table 2), $Q(2) = 0.94, p = .63$, and a regression analysis showed no significant relation between TC and the effect size of specific group goals ($\beta = .09, p = .39$). TC also did not moderate the effect of specific difficult goals, $Q(2) = 0.42, p = .81$. Table 3 shows that lab studies focused almost exclusively

Table 2

Specific Versus Nonspecific Goals: Effect Sizes and Moderators for All Specific Group Goals and for Specific Difficult Group Goals Only

Variable	All studies (specific group goals)					Specific difficult group goals				
	<i>k</i>	<i>d</i>	<i>SE</i>	95% CI		<i>k</i>	<i>d</i>	<i>SE</i>	95% CI	
				Low	High				Low	High
Overall effect	49	0.56	0.095	0.37	0.75	23	0.80	0.180	0.45	1.15
Goal difficulty										
Easy (1)	8	0.23	0.111	0.01	0.45					
Moderate (2)	15	0.53	0.145	0.25	0.81					
Difficult (3)	23	0.80	0.180	0.45	1.15					
Task interdependence										
Independent (1–2)	11	0.82	0.197	0.43	1.21	6	1.13	0.336	0.47	1.79
Dependent (2.5–7)	25	0.56	0.147	0.27	0.85	13	0.72	0.270	0.19	1.25
Task interdependence										
Pooled (1.0–2.0)	11	0.82	0.197	0.43	1.21	6	1.13	0.336	0.47	1.79
Sequential (2.25–4.0)	3	0.93	0.314	0.31	1.55	2	0.95	0.560	–0.15	2.05
Reciprocal (4.25–5.75)	8	0.64	0.296	0.06	1.22	2	1.97	0.806	0.39	3.55
Intensive (6.0–7.0)	14	0.44	0.195	0.06	0.82	9	0.43	0.308	–0.18	1.03
Task complexity										
Low (1–2.75)	22	0.50	0.092	0.32	0.68	8	0.74	0.138	0.47	1.01
Moderate (3–4.75)	21	0.52	0.163	0.20	0.84	13	0.71	0.285	0.15	1.27
High (5–7)	6	0.94	0.440	0.08	1.80	2	1.52	1.228	–0.89	3.93
Participation										
(1) Tell	18	0.51	0.186	0.15	0.87	12	0.68	0.285	0.12	1.24
(2) Tell-and-sell	17	0.48	0.126	0.23	0.73	7	0.76	0.238	0.29	1.23
(4) Participation	8	0.64	0.159	0.33	0.95	2	0.88	0.297	0.30	1.46
(5) Delegation	5	0.99	0.349	0.31	1.67	2	1.60	1.123	–0.60	3.80
Study type										
Laboratory	37	0.51	0.103	0.31	0.71	19	0.67	0.186	0.31	1.03
Field	12	0.71	0.226	0.27	1.15	4	1.51	0.629	0.28	2.74

Note. Findings ($k = 49$) are based on 739 groups, consisting of 2,954 individuals. k = number of effect sizes; CI = confidence interval.

on easy and moderately complex tasks, with similar effect sizes ($d = 0.56$ and $d = 0.48$, respectively).

The moderating role of participation (Hypothesis 4) also was not confirmed. The specific group goal effect did not differ among the tell, tell-and-sell, participation, and delegation conditions, $Q(3) = 2.29$, $p = .51$, and neither did the specific difficult group goal effect, $Q(3) = 0.80$, $p = .85$. The difference between the tell condition and the other three conditions combined also failed to reach significance, for all studies as well as for the subset of studies employing specific difficult goals. A comparison of lab and field studies revealed that assigning goals tell-style was common in lab studies (17 of 37 effect sizes) and uncommon in field studies (1 of 11 effect sizes).

Finally, we examined the role of IGs in groups (see Table 4). While the overall IG effect did not differ from zero ($d = -0.61 \pm 1.00$), the mean effect for interventions containing an egocentric IG (egocentric IG only, or combined with a group goal) was significant and negative ($d = -1.75 \pm 0.60$), thus supporting Hypothesis 5a. The mean effect size of interventions containing a groupcentric IG (groupcentric IG only, or combined with a group goal) was significant and positive ($d = 1.20 \pm 1.03$), supporting Hypothesis 5b.

Discussion

The contribution of this meta-analysis to the field of goal setting in groups is threefold. First, it constitutes the first comprehensive

quantitative test of the basic premise of goal setting for groups: Setting specific difficult goals will increase group performance. This endeavor also yielded explicit guidelines for evaluating goal difficulty. Second, this meta-analysis is the first to address multi-level goals in groups by assessing the effects of egocentric and groupcentric IGs on group performance. Third, we extended previous work with a quantitative analysis of potential moderators of the group goal effect, while one of these, TC, was investigated for the first time.

Our findings show a robust positive effect of specific group goals versus nonspecific goals on group performance. Compared with the effects of goals on individual performance found by Mento et al. (1987), the effects of specific difficult group goals versus both nonspecific goals and specific easy goals are somewhat stronger. Goal setting thus appears to be at least as effective at the group level as at the individual level. Moreover, negative effects of group goal setting are rare. Only one study reported a significant negative effect (Van Mierlo & Kleingeld, 2010) that was attributed to the specific task context (i.e., time pressure and risk).

To our surprise, our results did not support the moderating role of TI, TC, or participation. Perhaps most unexpected was the finding that the group goal effect did not decrease with increasing TC, because TC is considered a key moderator at the individual level (Wood et al., 1987). One possible explanation involves an advantage that groups hold over individuals: Different group mem-

Table 3
Specific Versus Nonspecific Goals: Overview of Effect Sizes and Moderators for Laboratory and Field Studies

Variable	Laboratory studies					Field studies				
	<i>k</i>	<i>d</i>	<i>SE</i>	95% CI		<i>k</i>	<i>d</i>	<i>SE</i>	95% CI	
				Low	High				Low	High
Overall effect	37	0.51	0.103	0.31	0.71	12	0.71	0.226	0.27	1.15
Goal difficulty										
Easy	5	0.22	0.138	-0.05	0.49	3	0.27	0.186	-0.09	0.63
Moderate	11	0.63	0.131	-0.37	0.89	4	0.44	0.380	-0.30	1.18
Difficult	19	0.68	0.186	0.32	1.04	4	1.51	0.395	0.28	2.74
Task interdependence										
Independent (1-2)	10	0.68	0.156	0.37	0.99	1	2.97	0.629	1.33	4.61
Dependent (2.5-7)	21	0.48	0.144	0.20	0.76	4	1.06	0.646	-0.21	2.33
Task interdependence										
Pooled (1.0-2.0)	10	0.68	0.156	0.37	0.99	1	2.97	0.836	1.33	4.61
Sequential (2.25-4.0)	3	0.93	0.314	0.32	1.54	0				
Reciprocal (4.25-5.75)	4	0.21	0.178	-0.14	0.56	4	1.06	0.646	-0.21	2.33
Intensive (6.0-7.0)	14	0.44	0.195	0.06	0.82	0				
Task complexity										
Low (1-2.75)	18	0.56	0.104	0.36	0.76	4	0.32	0.192	-0.06	0.70
Moderate (3-4.75)	18	0.48	0.179	0.13	0.83	3	0.87	0.511	-0.13	1.87
High (5-7)	1	0.33	0.381	-0.42	1.08	5	1.08	0.546	0.01	2.15
Participation										
(1) Tell	17	0.54	0.202	0.14	0.94	1	0.24	0.254	-0.26	0.74
(2) Tell-and-sell	11	0.57	0.139	0.30	0.84	6	0.43	0.272	-0.10	0.96
(4) Participation	6	0.65	0.191	0.28	1.02	2	0.67	0.357	-0.03	1.37
(5) Delegation	3	0.34	0.122	0.10	0.58	2	2.25	0.437	1.39	3.11

Note. *k* = number of effect sizes; CI = confidence interval.

bers may offer different perspectives to the problems that need to be solved to achieve high performance on complex group tasks, resulting in the development of more effective task strategies than could be achieved individually. Another explanation involves a limitation of our data: Only six studies used complex tasks, five of which were field studies. A third explanation relates to the Wood et al. (1987) meta-analysis, the main resource used to support the role of task complexity in goal setting. In effect, Wood et al. found only a very small difference in the goal-setting effect for simple and complex tasks, and only the simplest of tasks (e.g., reaction time, brain storming) showed a strong impact of goals. This suggests that the empirical evidence for the moderating role of TC may not be as strong as is often assumed.

Task interdependence did not moderate the group goal-group performance effect, which conflicts with the idea that group goals may yield efficiency losses in low-interdependent group tasks.

With respect to participation, the inferiority of a tell strategy was not confirmed. However, 17 of the 18 effect sizes were obtained in lab settings with relatively simple tasks for which the potential motivational and cognitive problems associated with a tell strategy (rejection of goals, little information sharing) are arguably less pronounced. The idea that in modern organizational contexts with relatively complex tasks a tell strategy does not have the desired effects cannot be addressed with the available data. Research by Haslam, Wegge, and Postmes (2009) suggested that participative goal setting becomes more effective as goals become more difficult over time. This seems a worthwhile proposition to pursue.

Finally, our findings suggest that egocentric IGs (aimed at maximizing individual performance) undermine group performance in interdependent groups, whereas groupcentric IGs (aimed at maximizing the individual contribution to the group) enhance group performance. This implies that IGs may help enhance group

Table 4
Specific Versus Nonspecific Goals: Overview of Effect Sizes for Individual Goal Interventions

Individual goal	Group goal								
	Without group goal			Combined with group goal			All		
	<i>k</i>	<i>d</i>	95% CI	<i>k</i>	<i>d</i>	95% CI	<i>k</i>	<i>d</i>	95% CI
Egocentric	3	-1.93	[-2.79, -1.09]	3	-1.61	[-2.62, -0.61]	6	-1.75	[-2.35, -1.15]
Groupcentric	2	0.40	[-0.13, 0.93]	2	2.19	[1.49, 2.89]	4	1.20	[0.17, 2.23]
All	5	-1.05	[-2.27, 0.17]	5	-0.16	[-1.97, 1.65]	10	-0.61	[-1.61, 0.39]

Note. Findings are based on 138 groups, consisting of 714 individuals receiving individual goals. *k* = number of effect sizes; CI = confidence interval.

performance, but only if they specifically target the individual contribution to the group. Often, this is not the case (e.g., interdisciplinary sales teams in which each sales person has individual targets). Especially when such targets are competitive in nature they may even undermine group performance. When group performance matters, egocentric IGs would best be framed as to emphasize the individual contribution to the group. As our findings for IGs were based on a relatively small number of studies with simple tasks in laboratory settings, future research should verify to what extent this generalizes to organizational settings.

Trends and Limitations in Group Goal-Setting Research

When we look at the studies considered for this meta-analysis, we can distinguish three broad eras. In the 1970s and 1980s, research on Locke's GST heavily focused on individual goal setting, and work on group goal setting was mostly limited to field studies in the behavior modification and organization development research traditions (e.g., Buller & Bell, 1986; Komaki, Barwick, & Scott, 1978). Many of these studies were excluded from our meta-analysis because the goal interventions could not be disentangled from other simultaneous interventions or because of other methodological problems. In the 1990s, group goal-setting research was quite diverse, with laboratory and field studies investigating the goal intervention–group performance relationship as well as various moderators and mediators. In the new millennium, field research on group goal setting virtually came to a halt. Instead, laboratory studies with ad hoc student samples mainly focused on multilevel goals and the effects of participative versus assigned goal setting. While the internal validity of these studies is uniformly high, they lack the ecological validity associated with studying ongoing groups in organizations. Recently, this issue emerged in a debate about negative side effects to goal setting in practice (Locke & Latham, 2009; Ordóñez, Schweitzer, Galinsky, & Bazerman, 2009), where the lack of valid field research that could support anecdotal findings impeded a constructive discussion. Thus, the development of a comprehensive theory on goal setting in groups would especially profit from findings in real-life organizational settings. However, field studies on group goal setting are a challenging endeavor. Even if organizations agree to participate, realizing a strong (quasi-experimental) design with valid performance measures that are comparable across conditions and reflect the multidimensional nature of team performance is no sinecure. An interesting compromise was found by Crown (2007b), who used preexistent groups as participants in her laboratory experiment. We would like to encourage the use of such creative alternatives to complement the typical laboratory student sample study.

Future Research

Although we have established a robust positive effect of group goals on group performance, our data suggested heterogeneity that was not accounted for by the moderators we examined. The roles of task complexity, task interdependence, and participation in group goal setting clearly warrant further attention. Specific issues that should be addressed include the effects of specific difficult

group goals for complex tasks, the effects of tell-style goals in field settings, and the changing nature of moderating effects over time.

To fill in the gaps in our knowledge with respect to moderators that we did not include, future research could focus on several aspects. For complex group tasks, the effects of specific difficult outcome goals versus specific difficult learning goals could be investigated to test whether individual-level findings—learning goals are more effective than outcome goals—are also valid in a group setting. As feedback is another potential moderator of goal-setting effects in groups, the research by Saavedra, Earley, and Van Dyne (1993) and DeShon et al. (2004) could be extended by studying the effects of different combinations of individual goals, group goals, individual feedback, and group feedback at different levels of task interdependence. Research along these lines is needed to gain a better insight into the functioning of goals in group settings and will serve the further development and continuous improvement of goal-based motivation interventions for groups.

References

References marked with an asterisk indicate studies included in the meta-analysis.

- Anderson, D. C., Crowell, C. R., Doman, M., & Howard, G. S. (1988). Performance posting, goal setting, and activity-contingent praise as applied to a university hockey team. *Journal of Applied Psychology, 73*, 87–95. doi:10.1037/0021-9010.73.1.87
- *Becker, L. J. (1978). Joint effect of feedback and goal setting on performance: A field study of residential energy conservation. *Journal of Applied Psychology, 63*, 428–433. doi:10.1037/0021-9010.63.4.428
- Borenstein, M., Hedges, L., Higgins, J., & Rothstein, H. (2005). *Comprehensive meta-analysis (Version 2)* [Computer software]. Englewood, NJ: Biostat.
- *Bray, S. R. (2004). Collective efficacy, group goals, and group performance of a muscular endurance task. *Small Group Research, 35*, 230–238. doi:10.1177/1046496403260531
- Buller, P. F. (1988). Long-term performance effects of goal setting and team-building interventions in an underground silver mine. *Organization Development Journal, 6*, 82–93.
- Buller, P. F., & Bell, C. H. (1986). Effects of team building and goal setting on productivity: A field experiment. *Academy of Management Journal, 29*, 305–328. doi:10.2307/256190
- *Crown, D. F. (2007a). Effects of structurally competitive multilevel goals for an independent task. *Small Group Research, 38*, 265–288. doi:10.1177/1046496407300482
- *Crown, D. F. (2007b). The use of group and groupcentric individual goals for culturally heterogeneous and homogeneous task groups: An assessment of European work teams. *Small Group Research, 38*, 489–508. doi:10.1177/1046496407300486
- *Crown, D. F., & Rosse, J. G. (1995). Yours, mine, and ours: Facilitating group productivity through the integration of individual and group goals. *Organizational Behavior and Human Decision Processes, 64*, 138–150. doi:10.1006/obhd.1995.1096
- DeShon, R. P., Kozlowski, S., Schmidt, A., Milner, K., & Wiechmann, D. (2004). A multiple-goal, multilevel model of feedback effects on the regulation of individual and team performance. *Journal of Applied Psychology, 89*, 1035–1056. doi:10.1037/0021-9010.89.6.1035
- *Durham, C. C., Knight, D., & Locke, E. A. (1997). Effects of leader role, team-set goal difficulty, efficacy, and tactics on team effectiveness. *Organizational Behavior and Human Decision Processes, 72*, 203–231. doi:10.1006/obhd.1997.2739
- *Durham, C. C., Locke, E. A., Poon, J. M. L., & McLeod, P. L. (2000).

- Effects of group goals and time pressure on group efficacy, information-seeking strategy, and performance. *Human Performance*, 13, 115–138. doi:10.1207/s15327043hup1302_1
- *Fellner, D. J., & Sulzer-Azaroff, B. (1985). Occupational safety: Assessing the impact of adding assigned or participative goal-setting. *Journal of Organizational Behavior Management*, 7, 3–24.
- *Gowen, C. R. (1985). Managing work group performance by individual goals and group goals for an interdependent group task. *Journal of Organizational Behavior Management*, 7, 5–27.
- *Guthrie, J. P., & Hollensbe, E. C. (2004). Group incentives and performance: A study of spontaneous goal setting, goal choice and commitment. *Journal of Management*, 30, 263–284. doi:10.1016/j.jm.2003.02.001
- *Haslam, S. A., Wegge, J., & Postmes, T. (2009). Are we on a learning curve or a treadmill? The benefits of participative group goal setting become apparent as tasks become increasingly challenging over time. *European Journal of Social Psychology*, 39, 430–446. doi:10.1002/ejsp.546
- Hedges, L. V., & Vevea, J. L. (1998). Fixed- and random-effects in meta-analysis. *Psychological Methods*, 3, 486–504. doi:10.1037/1082-989X.3.4.486
- Heller, F. A. (1971). *Managerial decision-making: A study of leadership styles and power-sharing among senior managers*. London, England: Tavistock.
- Hertel, G., Kerr, N. L., & Messé, L. A. (2000). Motivation gains in performance groups: Paradigmatic and theoretical developments on the Köhler effect. *Journal of Personality and Social Psychology*, 79, 580–601. doi:10.1037/0022-3514.79.4.580
- Jewel, L. N., & Reitz, H. J. (1981). *Group effectiveness in organizations*. Glenview, IL: Scott, Foresman.
- *Johnson, S. R., Ostrow, A. C., Perna, F. M., & Etzel, E. F. (1997). The effects of group versus individual goal setting on bowling performance. *The Sport Psychologist*, 11, 190–200.
- *Klein, H. J., & Mulvey, P. W. (1995). Two investigations of the relationships among group goals, goal commitment, cohesion, and performance. *Organizational Behavior and Human Decision Processes*, 61, 44–53. doi:10.1006/obhd.1995.1004
- *Knight, D., Durham, C., & Locke, E. A. (2001). The relationship of team goals, incentives, and efficacy to strategic risk, tactical implementation, and performance. *Academy of Management Journal*, 44, 326–338. doi:10.2307/3069459
- Komaki, J., Barwick, K. D., & Scott, L. R. (1978). A behavioral approach to occupational safety: Pinpointing and reinforcing safe performance in a food manufacturing plant. *Journal of Applied Psychology*, 63, 434–445. doi:10.1037/0021-9010.63.4.434
- Kozlowski, S. W. J., & Bell, B. L. (2003). Work groups and teams in organizations. In W. C. Borman, D. R. Ilgen, & R. J. Klimoski (Eds.), *Handbook of psychology: Industrial and organizational psychology* (Vol. 12, pp. 333–375). Hoboken, NJ: Wiley.
- *Larson, J. R., & Schaumann, L. J. (1993). Group goals, group coordination, and group member motivation. *Human Performance*, 6, 49–69. doi:10.1207/s15327043hup0601_3
- Latham, G. P., Erez, M., & Locke, E. A. (1988). Resolving scientific disputes by the joint design of crucial experiments: Application to the Erez-Latham dispute regarding participation in goal setting. *Journal of Applied Psychology*, 73, 753–772. doi:10.1037/0021-9010.73.4.753
- Latham, G. P., & Lee, T. W. (1986). Goal setting. In E. A. Locke (Ed.), *Generalizing from laboratory to field settings* (pp. 101–117). Lexington, MA: Lexington Books.
- Latham, G. P., Locke, E. A., & Fassina, N. E. (2002). The high performance cycle: Standing the test of time. In S. Sonnentag (Ed.), *The psychological management of individual performance: A handbook in the psychology of management in organizations* (pp. 201–228). Chichester, England: Wiley.
- Lee, C. (1989). The relationship between goal setting, self-efficacy, and female field hockey team performance. *International Journal of Sport Psychology*, 20, 147–161.
- Locke, E. A., Chah, D., Harrison, S., & Lustgarten, N. (1989). Separating the effects of goal specificity from goal level. *Organizational Behavior and Human Decision Processes*, 43, 270–287. doi:10.1016/0749-5978(89)90053-8
- Locke, E. A., & Latham, G. P. (1990). *A theory of goal setting and task performance*. Englewood Cliffs, NJ: Prentice Hall.
- Locke, E. A., & Latham, G. P. (2009). Has goal setting gone wild, or have its attackers abandoned good scholarship? *Academy of Management Perspectives*, 23, 17–23. doi:10.5465/AMP.2009.37008000
- *Mann, L., Samson, D., & Dow, D. (1998). A field experiment on the effects of benchmarking and goal setting on company sales performance. *Journal of Management*, 24, 73–96. doi:10.1016/S0149-2063(99)80054-3
- Marín-Martínez, F., & Sánchez-Meca, J. (2010). Weighting by inverse variance or by sample size in random-effects meta-analysis. *Educational and Psychological Measurement*, 70, 56–73. doi:10.1177/0013164409344534
- Mento, A. J., Steel, R. P., & Karren, R. J. (1987). A meta-analytic study on the effects of goal setting on task performance: 1966–1984. *Journal of Organizational Behavior*, 39, 52–83.
- *Mesch, D. J., Farh, J. L., & Podsakoff, P. M. (1994). Effects of feedback sign on group goal setting, strategies, and performance. *Group & Organization Management*, 19, 309–333. doi:10.1177/1059601194193006
- Mitchell, T. R. (1973). Motivation and participation: An integration. *Academy of Management Journal*, 16, 670–679. doi:10.2307/254699
- Mitchell, T. R., Thompson, K. R., & George-Falvy, J. (2000). Goal setting: Theory and practice. In C. L. Cooper & E. A. Locke (Eds.), *Industrial and organizational psychology: Linking theory with practice* (pp. 216–249). Oxford, England: Blackwell.
- *Miura, A. (2003). Effects of communication medium and goal setting on group brainstorming. In K. Yang, K. Hwang, P. B. Pedersen, & I. Daibo (Eds.), *Progress in Asian social psychology: Conceptual and empirical contributions* (pp. 199–215). Westport, CT: Praeger.
- *Mulvey, P. W., & Klein, H. J. (1998). The impact of perceived loafing and collective efficacy in group goal processes and group performance. *Organizational Behavior and Human Decision Processes*, 74, 62–87. doi:10.1006/obhd.1998.2753
- *Mulvey, P. W., & Ribbens, B. A. (1999). The effects of intergroup competition and assigned group goals on group efficacy and group effectiveness. *Small Group Research*, 30, 651–677. doi:10.1177/104649649903000601
- *Noel, T. W. (1997). *The effects of learning goals on group performance on an interdependent task* (Doctoral dissertation). Available from ProQuest Dissertations and Theses database. (UMI No. AAT 9812911)
- O’Leary-Kelly, A. M., Martocchio, J. J., & Frink, D. D. (1994). A review of the influence of group goals on group performance. *Academy of Management Journal*, 37, 1285–1301. doi:10.2307/256673
- Ordóñez, L. D., Schweitzer, M. E., Galinsky, A. D., & Bazerman, M. H. (2009). Goals gone wild: The systematic side effects of overprescribing goal setting. *Academy of Management Perspectives*, 23, 6–16. doi:10.5465/AMP.2009.37007999
- *Pritchard, R. D., Jones, S. E., Roth, P. L., Stuebing, K. K., & Ekeberg, S. E. (1988). The effects of feedback, goal setting, and incentives on organizational productivity. *Journal of Applied Psychology*, 73, 337–358. doi:10.1037/0021-9010.73.2.337
- *Quigley, N. R. (2003). *The relationship between leader core self-evaluations, team feedback, leader efficacy, transformational leadership, team efficacy, team goals, team action and transition processes, and team performance* (Doctoral dissertation). Available from ProQuest Dissertations and Theses database. (UMI No. AAT 3107253)
- Saavedra, R., Earley, P. C., & Van Dyne, L. (1993). Complex interdepen-

- dence in task-performing groups. *Journal of Applied Psychology*, 78, 61–72. doi:10.1037/0021-9010.78.1.61
- Sagie, A. (1994). Participative decision-making and performance: A moderator analysis. *Journal of Applied Behavioral Science*, 30, 227–246. doi:10.1177/0021886394302006
- *Sagie, A. (1996). Effects of leader's communication style and participative goal setting on performance and attitudes. *Human Performance*, 9, 51–64. doi:10.1207/s15327043hup0901_3
- Schmidt, F. (2008). Meta-analysis: A constantly evolving research integrational tool. *Organizational Research Methods*, 11, 96–113. doi:10.1177/1094428107303161
- *Seijts, G. H., & Latham, G. P. (2000). The effects of goal setting and group size on performance in a social dilemma. *Canadian Journal of Behavioural Science*, 32, 104–116. doi:10.1037/h0087105
- *Silver, W. S., & Bufanio, K. M. (1996). The impact of group efficacy and group goals on group task performance. *Small Group Research*, 27, 347–359. doi:10.1177/1046496496273001
- Smith, K. G., Locke, E. A., & Barry, D. (1990). Goal setting, planning, and organizational performance: An experimental simulation. *Organizational Behavior and Human Decision Processes*, 46, 118–134. doi:10.1016/0749-5978(90)90025-5
- Van der Vegt, G., Emans, B., & Van de Vliert, E. (1998). Motivating effects of task and outcome interdependence in work teams. *Group & Organization Management*, 23, 124–143. doi:10.1177/1059601198232003
- Van de Ven, A. H., Delbecq, A. L., & Koenig, R. R., Jr. (1976). Determinants of coordination modes within organizations. *American Sociological Review*, 41, 334–335.
- *Van Mierlo, H., & Kleingeld, A. (2009). [Specific difficult group goals versus do-your-best goals for high-risk interdependent group tasks]. Unpublished raw data.
- *Van Mierlo, H., & Kleingeld, A. (2010). Goals, strategies, and group performance: Some limits of goal setting in groups. *Small Group Research*, 41, 524–555. doi:10.1177/1046496410373628
- Wageman, R. (1995). Interdependence and group effectiveness. *Administrative Science Quarterly*, 40, 145–180. doi:10.2307/2393703
- Wagner, J. A. (1994). Participation's effects on performance and satisfaction: A reconsideration of the evidence. *Academy of Management Review*, 19, 312–330.
- Wagner, J. A., & Gooding, R. Z. (1987). Shared influence and organizational behavior: A meta-analysis of situational variables expected to moderate participation-outcome relationships. *Academy of Management Journal*, 30, 524–541. doi:10.2307/256012
- Wagner, J. A., Leana, C. R., Locke, E. A., & Schweiger, D. M. (1997). Cognitive and motivational frameworks in U.S. research on participation: A meta-analysis of primary effects. *Journal of Organizational Behavior*, 18, 49–65. doi:10.1002/(SICI)1099-1379(199701)18:1<49::AID-JOB789>3.0.CO;2-P
- *Wegge, J. (2000). Participation in group goal setting: Some novel findings and a comprehensive model as a new ending to an old story. *Applied Psychology: An International Review*, 49, 498–516. doi:10.1111/1464-0597.00028
- *Wegge, J., & Haslam, S. A. (2005). Improving work motivation and performance in brainstorming groups: The effects of three group goal-setting strategies. *European Journal of Work and Organizational Psychology*, 14, 400–430. doi:10.1080/13594320500349961
- *Wegge, J., & Haslam, S. A. (2008). *When group goal setting fails: The impact of task difficulty and unfair supervisors*. Manuscript submitted for publication.
- *Weingart, L. R. (1992). Impact of group goals, task component complexity, effort, and planning on group performance. *Journal of Applied Psychology*, 77, 682–693. doi:10.1037/0021-9010.77.5.682
- *Weldon, E., Jehn, K. A., & Pradhan, P. (1991). Processes that mediate the relationship between a group goal and improved group performance. *Journal of Personality and Social Psychology*, 61, 555–569. doi:10.1037/0022-3514.61.4.555
- Weldon, E., & Weingart, L. R. (1993). Group goals and group performance. *British Journal of Social Psychology*, 32, 307–334.
- *Weldon, E., & Yun, S. (2000). The effects of proximal and distal goals on goal level, strategy development, and group performance. *Journal of Applied Behavioral Science*, 36, 336–344. doi:10.1177/0021886300363004
- *Whitney, K. (1994). Improving group task performance: The role of group goals and group efficacy. *Human Performance*, 7, 55–78. doi:10.1207/s15327043hup0701_5
- Wood, R. E. (1986). Task complexity: Definition of the construct. *Organizational Behavior and Human Decision Processes*, 37, 60–82. doi:10.1016/0749-5978(86)90044-0
- Wood, R. E., Mento, A. J., & Locke, E. A. (1987). Task complexity as a moderator of goal effects: A meta-analysis. *Journal of Applied Psychology*, 72, 416–425. doi:10.1037/0021-9010.72.3.416

Appendix A

Moderator Codes and Effect Sizes for Studies Included in the Meta-Analysis

Table A1

Moderator Codes and Effect Sizes d for Studies Included in the Meta-Analysis

Author(s)	Condition, according to author(s)	Task interdependence	Task complexity	Participation	Goal difficulty	Setting	Effect size d			
Becker (1978)	Difficult goal plus feedback	n/a	2.25	Low	2	Tell-and-sell	Difficult	Field	0.79	
Becker (1978)	Easy goal plus feedback	n/a	2.25	Low	2	Tell-and-sell	Easy	Field	0.48	
Becker (1978)	Difficult goal, no feedback	n/a	2.25	Low	2	Tell-and-sell	Difficult	Field	0.12	
Becker (1978)	Easy goal, no feedback	n/a	2.25	Low	2	Tell-and-sell	Easy	Field	-0.08	
Bray (2004)	Group goal	7	Intensive	1.25	Low	5	Delegation	Easy	Laboratory	0.35
Crown (2007a)	Group goal	6	Intensive	3	Moderate	1	Tell	Difficult	Laboratory	1.85
Crown (2007b)	Group goal	6	Intensive	3	Moderate	1	Tell	Difficult	Laboratory	1.34
Crown & Rosse (1995)	Group goal	6	Intensive	3	Moderate	1	Tell	Difficult	Laboratory	0.74
Fellner & Sulzer-Azaroff (1985)	Group goal set by foreman	n/a	3.5	Moderate	1	Tell	Moderate	Field	0.24	
Fellner & Sulzer-Azaroff (1985)	Participative group goal	n/a	3.5	Moderate	4	Participation	Easy	Field	0.44	
Haslam, Wegge, & Postmes (2009)	Experiment 1, imposed group goal	6	Intensive	2	Low	2	Tell-and-sell	Moderate	Laboratory	0.21
Haslam, Wegge, & Postmes (2009)	Experiment 1, participative group goal	6	Intensive	2	Low	4	Participation	Moderate	Laboratory	0.20
Haslam, Wegge, & Postmes (2009)	Experiment 2, imposed easy group goal	6	Intensive	2	Low	2	Tell-and-sell	Moderate	Laboratory	0.89
Haslam, Wegge, & Postmes (2009)	Experiment 2, participative easy group goal	6	Intensive	2	Low	4	Participation	Moderate	Laboratory	0.96
Haslam, Wegge, & Postmes (2009)	Experiment 2, imposed hard group goal	6	Intensive	2	Low	2	Tell-and-sell	Difficult	Laboratory	0.91
Haslam, Wegge, & Postmes (2009)	Experiment 2, participative hard group goal	6	Intensive	2	Low	4	Participation	Difficult	Laboratory	0.92
Johnson, Ostrow, Perna, & Etzel (1997)	Group goal	1.5	Pooled	3.25	Moderate	2	Tell-and-sell	Difficult	Field	2.97
Larson & Schaumann (1993)	Group goal, low coordination demand	1	Pooled	2	Low	1	Tell	Difficult	Laboratory	1.63
Larson & Schaumann (1993)	Group goal, high coordination demand	1	Pooled	3	Moderate	1	Tell	Difficult	Laboratory	1.82
Mann, Samson, & Dow (1998)	Small wins	5	Reciprocal	5	High	n/a	Moderate	Field	-0.01	
Mann, Samson, & Dow (1998)	Big bang	5	Reciprocal	5	High	2	Tell-and-sell	Moderate	Field	-0.18
Miura (2003)	Group goal, face-to-face	5.5	Reciprocal	2	Low	1	Tell	Difficult	Laboratory	1.17
Miura (2003)	Group goal, computer-mediated communication	4.5	Reciprocal	2	Low	1	Tell	Moderate	Laboratory	-0.05
Mulvey & Ribbens (1999)	Group goal	4	Sequential	3	Moderate	1	Tell	Difficult	Laboratory	0.41
Noel (1997)	Do-your-best learning plus difficult outcome group goal	6	Intensive	5	High	1	Tell	Difficult	Laboratory	0.33
Pritchard, Jones, Roth, Stuebing, & Ekeberg (1988)	Group goal	n/a	5	High	4	Participation	n/a	Field	1.21	
Sagie (1996)	Participative group goal	4.75	Reciprocal	3.25	Moderate	5	Delegation	n/a	Laboratory	0.17
Sagie (1996)	Assigned group goal	4.75	Reciprocal	3.25	Moderate	1	Tell	n/a	Laboratory	0.09
Seijts & Latham (2000)	Difficult group goal, three-person groups	2	Pooled	3	Moderate	2	Tell-and-sell	Moderate	Laboratory	0.33
Seijts & Latham (2000)	Difficult group goal, seven-person groups	2	Pooled	3	Moderate	2	Tell-and-sell	Difficult	Laboratory	0.17
Seijts & Latham (2000)	Moderately difficult group goal, three-person groups	2	Pooled	3	Moderate	2	Tell-and-sell	Moderate	Laboratory	0.38

(Appendices continue)

Table A1 (continued)

Author(s)	Condition, according to author(s)	Task interdependence	Task complexity	Participation	Goal difficulty	Setting	Effect size <i>d</i>
Seijts & Latham (2000)	Moderately difficult group goal, seven-person groups	2	Pooled	3	Moderate	2 Tell-and-sell	Easy Laboratory 0.19
Van Mierlo & Kleingeld (2009)	Group goal without strategy discussion	6	Intensive	3	Moderate	1 Tell	Difficult Laboratory -0.12
Van Mierlo & Kleingeld (2009)	Group goal with strategy discussion	6	Intensive	3	Moderate	1 Tell	Difficult Laboratory -0.48
Van Mierlo & Kleingeld (2010)	Group goal	6	Intensive	3	Moderate	1 Tell	Difficult Laboratory -1.18
Wegge (2000)	Assigned group goal	2	Pooled	2	Low	2 Tell-and-sell	Difficult Laboratory 0.96
Wegge (2000)	Participative group goal	2	Pooled	2	Low	5 Delegation	Difficult Laboratory 0.53
Wegge & Haslam (2005)	Directive group goal setting	2	Pooled	2	Low	2 Tell-and-sell	Moderate Laboratory 0.99
Wegge & Haslam (2005)	Participative group goal setting	2	Pooled	2	Low	4 Participation	Moderate Laboratory 1.02
Wegge & Haslam (2008)	Directive group goal setting, easy task	n/a		2.5	Low	2 Tell-and-sell	Easy Laboratory 0.13
Wegge & Haslam (2008)	Directive group goal setting, difficult task	n/a		3.5	Moderate	2 Tell-and-sell	Difficult Laboratory 0.81
Wegge & Haslam (2008)	Participative group goal setting, easy task	n/a		2.5	Low	4 Participation	Easy Laboratory -0.13
Wegge & Haslam (2008)	Participative group goal setting, difficult task	n/a		3.5	Moderate	4 Participation	Difficult Laboratory 0.80
Weldon, Jehn, & Pradhan (1991)	Assigned high group goal	4	Sequential	3.75	Moderate	1 Tell	Difficult Laboratory 1.53
Weldon, Jehn, & Pradhan (1991)	Assigned low group goal	4	Sequential	3.75	Moderate	1 Tell	Moderate Laboratory 0.92
Weldon & Yun (2000)	Short-term plus long-term group goal	5.5	Reciprocal	5	High	5 Delegation	Difficult Field 2.78
Weldon & Yun (2000)	Long-term group goal	5.5	Reciprocal	5	High	5 Delegation	Moderate Field 1.89
Whitney (1994)	Assigned difficult group goal	n/a		2.75	Low	1 Tell	Moderate Laboratory 0.64
Whitney (1994)	Assigned moderate group goal	n/a		2.75	Low	1 Tell	Easy Laboratory -0.28

Table A2

*Effect Sizes *r* for Test of Hypothesis 1b*

Author(s)	Study design	Basis for effect size	Effect size <i>r</i>
Becker (1978)	Experimental	Difficult goal plus feedback vs. easy goal plus feedback	.25
Becker (1978)	Experimental	Difficult goal no feedback vs. easy goal no feedback	.10
Bray (2004)	Correlational	Difficulty of group-set group goal	.87
Durham, Knight, & Locke (1997)	Experimental	Assigned hard goal vs. assigned easy goal	-.01
Durham, Locke, Poon, & McLeod (2000)	Experimental	Difficult group goal vs. easy group goal	-.08
Guthrie & Hollensbe (2004)	Correlational	Chosen group goal level	.04
Klein & Mulvey (1995)	Correlational	Self-set group goal difficulty (Study 1)	.32
Klein & Mulvey (1995)	Correlational	Self-set group goal difficulty (Study 2)	.71
Knight, Durham, & Locke (2001)	Experimental	Assigned difficult team goal vs. assigned easy team goal	.11
Mesch, Farh, & Podsakoff (1994)	Correlational	Group goal level	.46
Mulvey & Klein (1998)	Correlational	Group goal difficulty (Study 1)	.30
Mulvey & Klein (1998)	Correlational	Collective goal difficulty (Study 2)	.57
Silver & Bufanio (1996)	Correlational	Group goal difficulty	.53
Weingart (1992)	Experimental	Difficult vs. easy group goal (low task complexity)	.56
Weingart (1992)	Experimental	Difficult vs. easy group goal (high task complexity)	.62
Weldon, Jehn, & Pradhan (1991)	Experimental	Assigned high group goal vs. assigned low group goal	.30

Note. Findings are based on 728 groups consisting of 2,632 individuals.

(Appendices continue)

Table A3

Effect Sizes d and Coding of Individual Goals and Task Interdependence for Studies Involving an Individual Goal

Author(s)	Condition, according to author(s)	Coding of individual goal	Task interdependence	Effect size d
Crown (2007a)	Egocentric individual goal	Egocentric	6	-3.11
Crown (2007a)	Egocentric individual goal and group goal	Egocentric	6	-2.98
Crown (2007b)	Groupcentric individual goal and group goal	Groupcentric	6	2.33
Crown & Rosse (1995)	Egocentric individual goal	Egocentric	6	-1.46
Crown & Rosse (1995)	Egocentric individual goal plus group goal	Egocentric	6	-1.04
Crown & Rosse (1995)	Groupcentric individual goal	Groupcentric	6	0.02
Crown & Rosse (1995)	Groupcentric individual goal plus group goal	Groupcentric	6	1.99
Gowen (1985)	Individual goal	Groupcentric	3	0.60
Van Mierlo & Kleingeld (2010)	Individual goal	Egocentric	6	-1.63
Van Mierlo & Kleingeld (2010)	Individual goal and group goal	Egocentric	6	-1.17

Appendix B

Publications Excluded From the Meta-Analysis

In all, 131 publications were considered for inclusion in this meta-analysis. Examination of the full-text manuscripts resulted in the exclusion of 93 publications. These are listed below. With each reference the primary reason for excluding the publication is provided (number in superscript). Six broad categories were used: (1) no measurement or manipulation of outcome goal difficulty or specificity; (2) required statistical data could not be retrieved; (3) no pretest or control group available; (4) multiple interventions, possible confounding of goal effects; (5) study does not involve goal setting in groups; and (6) not an empirical study.

For some studies, multiple reasons apply. For these studies, only the most important or obvious reason is listed.

References

- ¹Adkinson, J. T. (2006). *An analysis of pastoral perceptions of organizational conditions that promote ministry team effectiveness in multi-staff churches* (Doctoral dissertation). Available from ProQuest Dissertations and Theses database. (UMI No. AAT 3221117)
- ¹Allen, B. C., Sargent, L. D., & Bradley, L. M. (2003). Differential effects of task and reward interdependence on perceived helping behavior, effort, and group performance. *Small Group Research, 34*, 716-740. doi:10.1177/1046496403257615
- ¹Alper, S., Tjosvold, D., & Law, K. S. (1998). Interdependence and controversy in group decision making: Antecedents to effective self-managing teams. *Organizational Behavior and Human Decision Processes, 74*, 33-52. doi:10.1006/obhd.1998.2748
- ¹Anderson, D. C., Crowell, C. R., Doman, M., & Howard G. S. (1988). Performance posting, goal setting, and activity-contingent praise as applied to a university hockey team. *Journal of Applied Psychology, 73*, 87-95. doi:10.1037/0021-9010.73.1.87
- ¹Andrews, A. L. (2001). *Virtual teams and technology: The relationship between training and team effectiveness* (Doctoral dissertation). Available from ProQuest Dissertations and Theses database. (UMI No. AAT 1405437)
- ¹Antoni, C. (2005). Management by objectives: An effective tool for teamwork? *International Journal of Human Resource Management, 16*, 174-184. doi:10.1080/0958519042000311381
- ⁶Aubé, C., Rousseau, V., & Savoie, A. (2006). Les interventions régulatrices groupales et le rendement des équipes de travail: Un modèle théorique [Group regulating interventions and team performance: A theoretical model]. *Le Travail Humain, 69*, 269-294.
- ¹Baumler, J. W. (1971). Defined criteria of performance in organizational control. *Administrative Science Quarterly, 16*, 340-350.
- ¹Bigley, M. B. (2006). *Interdisciplinary health care teams: Organizational context, team performance, team development, and team goals* (Doctoral dissertation). Available from ProQuest Dissertations and Theses database. (UMI No. AAT 3206045)
- ⁵Bliss, J. P., & Fallon, C. K. (2003). The effects of leadership style and primary task workload on team performance and follower satisfaction. *International Journal of Applied Aviation Studies, 3*, 259-276.
- ¹Booth, C. N. (2001). *Perceptions of area of expertise teams: A study for Michigan State University Extension* (Doctoral dissertation). Available from ProQuest Dissertations and Theses database. (UMI No. AAT 3021741)
- ¹Brown, T. C., & Latham, G. P. (2002). The effects of behavioral outcome goals, learning goals, and urging people to do their best on an individual's teamwork behavior in a group problem-solving task. *Canadian Journal of Behavioural Science, 34*, 276-285. doi:10.1037/h0087180
- ²Buller, P. F. (1988). Long-term performance effects of goal setting and team-building interventions in an underground silver mine. *Organizational Development Journal, 6*, 82-93.
- ²Buller, P. F., & Bell, C. H. (1986). Effects of team building and goal setting on productivity: A field experiment. *Academy of Management Journal, 29*, 305-328. doi:10.2307/256190
- ¹Chalos, P., Poon, M., Tjosvold, D., & Dunn, W. J., III. (2004). Budget team goals and performance antecedent and mediating effects. In V. Arnold (Ed.), *Advances in accounting behavioral research* (pp. 123-152). Oxford, England: Elsevier.
- ¹Chen, G., Kanfer, R., DeShon, R., Mathieu, J. E., & Kozlowski, S. W. J. (2006). The motivating potential of teams: Test and extension of Chen and Kanfer's (2006) cross-level model of motivation in teams. *Organizational Behavior and Human Decision Processes, 110*, 45-55.

(Appendices continue)

- ¹Chen, G., Tjosvold, D., & Liu, C. (2006). Cooperative goals, leader people and productivity values: Their contribution to top management teams in China. *Journal of Management Studies*, *43*, 1177–1200.
- ¹Chen, N. Y., Lu, J., & Tjosvold, D. (2008). Effects of team goal interdependence on newcomer socialization: An experiment in China. *Journal of Applied Social Psychology*, *38*, 198–214.
- ¹Chiu, S. (2005). *The linkage of job performance to goal setting, work motivation, team building, and organizational commitment in the high-tech industry in Taiwan* (Doctoral dissertation). Available from ProQuest Dissertations and Theses database. (UMI No. AAT 3158664)
- ¹Cohen, S. G., Mohrman, S. A., & Mohrman, A. M. (1999). We can't get there unless we know where we are going: Direction setting for knowledge work teams. In R. Wageman (Ed.), *Research on managing groups and teams: Groups in context* (Vol. 2, pp. 1–31). Greenwich, CT: JAI Press.
- ¹Condon, C. N. (2003). *The antecedents and consequences of external leader empowerment of project teams* (Doctoral dissertation). Available from ProQuest Dissertations and Theses database. (UMI No. AAT 3096344)
- ¹De Dreu, K. W. (2007). Cooperative outcome interdependence, task reflexivity, and team effectiveness: A motivated information processing perspective. *Journal of Applied Psychology*, *92*, 628–638. doi:10.1037/0021-9010.92.3.628
- ²DeShon, R., Kozlowski, S., Schmidt, A., Milner, K., & Wiechmann, D. (2004). A multiple-goal, multilevel model of feedback effects on the regulation of individual and team performance. *Journal of Applied Psychology*, *89*, 1035–1056. doi:10.1037/0021-9010.89.6.1035
- ²De Souza, G., & Klein, H. J. (1996). Emergent leadership in the group goal-setting process. *Small Group Research*, *26*, 475–496. doi:10.1177/1046496495264002
- ¹Diskul, P. (2001). *Toward effective self-managing work teams (SMWTs): The relationship between perceived leadership styles and SMWT characteristics* (Doctoral dissertation). Available from ProQuest Dissertations and Theses database. (UMI No. AAT 3029605)
- ⁴Doerr, K. H., Mitchell, T. R., Klastorin, T. D., & Brown, K. A. (1996). Impact of material flow policies and goals on job outcomes. *Journal of Applied Psychology*, *81*, 142–152.
- ¹Dunkel, H., & Krause, A. (2003). Was unterscheidet erfolgreiche von weniger erfolgreiche Gruppen? [What distinguishes successful from less successful groups?]. In K. Hamborg & H. Holling (Eds.), *Innovative Personal- und Organisationsentwicklung* (pp. 312–331). Göttingen, Germany: Hogrefe.
- ⁴Emmert, G. D. (1978). Measuring the impact of group performance feedback versus individual performance feedback in an industrial setting. *Journal of Organizational Behavior Management*, *1*, 134–141.
- ¹Erke, A., & Bungard, W. (2006). Erfahrungen mit Zielvereinbarungen bei Teilautonomer Gruppenarbeit—Ergebnisse einer Expertenbefragung [Goal-setting within semi-autonomous work groups—Results of a survey among teamwork experts]. *Zeitschrift für Arbeits- und Organisationspsychologie*, *50*, 155–162.
- ¹Fandt, P. M., Richardson, W. D., & Connor H. M. (1990). The impact of goal setting on team simulation experience. *Simulation & Gaming*, *21*, 411–422.
- ²Graziano, W. G., Hair, E. C., & Finch, J. F. (1997). Competitiveness mediates the link between personality and group performance. *Journal of Personality and Social Psychology*, *73*, 1394–1408.
- ¹Harlow, K. C. (1989). Effect of knowledge of one correct choice on group performance. *Psychological Reports*, *65*, 861–862.
- ¹Hecht, T. D., Allen, N. J., Klammer, J. D., & Kelly, E. C. (2002). Group beliefs, ability, and performance: The potency of group potency. *Group Dynamics*, *6*, 143–152.
- ¹Hertel, G., Konradt, U., & Orlikowski, B. (2004). Managing distance by interdependence: Goal setting, task interdependence, and team based rewards in virtual teams. *European Journal of Work and Organizational Psychology*, *13*, 1–28. doi:10.1080/13594320344000228
- ²Hinsz, V. B. (1995). Goal setting by groups performing an additive task: A comparison with individual goal setting. *Journal of Applied Social Psychology*, *25*, 965–990. doi:10.1111/j.1559-1816.1995.tb02385.x
- ³Hinsz, V. B., & Nickell, G. S. (2004). Positive reactions to working in groups in a study of group and individual goal decision making. *Group Dynamics*, *8*, 253–264. doi:10.1037/1089-2699.8.4.253
- ¹Hoegl, M., & Parboteeah, K. P. (2003). Goal setting and team performance in innovative projects: On the moderating role of teamwork quality. *Small Group Research*, *35*, 158–173.
- ⁶Hollensbe, E. C., & Guthrie, J. P. (2000). Group pay-for-performance plans: The role of spontaneous goal setting. *Academy of Management Review*, *25*, 864–872.
- ²Hutson-Comeaux, S. L., & Kelly, J. R. (1998). Sex differences in interaction style and group task performance: The process-performance relationship. *Journal of Social Behavior and Personality*, *14*, 491–498.
- ¹Janz, B. D., Colquitt, J. A., & Noe, R. A. (1997). Knowledge worker team effectiveness: The role of autonomy, interdependence, team development, and contextual support variables. *Personnel Psychology*, *50*, 877–904.
- ¹Johnson, D. W., Johnson, R. T., Ortiz, A. E., & Stanne, M. (1991). The impact of positive goal and resource interdependence on achievement, interaction, and attitudes. *Journal of General Psychology*, *118*, 341–347.
- ¹Johnson, D. W., Johnson, R. T., & Stanne, M. B. (1989). Impact of goal and resource interdependence on problem solving success. *Journal of Social Psychology*, *129*, 621–629.
- ³Kanaar, J. L. (2006). *Effects of group financial incentives and individual evaluation upon group performance* (Doctoral dissertation). Available from ProQuest Dissertations and Theses database. (UMI No. AAT 3233810)
- ¹Kelly, J. R., & McGrath, J. E. (1990). Effects of time limits and task types on task performance and interaction of four-person groups. *Journal of Personality and Social Psychology*, *49*, 395–407.
- ³Kernan, M. C., Bruning, N. S., & Miller-Guhde, L. (1994). Individual and group performance: Effects of task complexity and information. *Human Performance*, *7*, 273–289.
- ⁵Kim, J. S., & Hamner, W. C. (1976). Effect of performance feedback and goal setting on productivity and satisfaction in an organizational setting. *Journal of Applied Psychology*, *61*, 48–57.
- ⁵Kingston, K. M., & Hardy, L. (1997). Effects of different types of goals on processes that support performance. *The Sport Psychologist*, *11*, 277–293.
- ⁶Kleinbeck, U., & Schmidt, K. (2004). Gruppenleistung und Leistungsförderung [Group performance and performance promotion]. In H. Schuler (Ed.), *Organisationspsychologie: Gruppe und Organisation* (pp. 445–491). Göttingen, Germany: Hogrefe.
- ⁴Koch, J. L. (1979). Effects of goal specificity and performance feedback to work groups on peer leadership, performance, and attitudes. *Human Relations*, *10*, 819–840.
- ⁴Komaki, J., Barwick, K. D., & Scott, L. R. (1978). A behavioral approach to occupational safety: Pinpointing and reinforcing safe performance in a food manufacturing plant. *Journal of Applied Psychology*, *63*, 434–445.

(Appendices continue)

- ⁵Latham, G. P., & Kinne, S. B. III. (1974). Improving job performance through training in goal setting. *Journal of Applied Psychology, 59*, 187–191.
- ¹Latham, G. P., & Locke, E. A. (1975). Increasing productivity with decreasing time limits: A field replication of Parkinson's law. *Journal of Applied Psychology, 60*, 524–526.
- ²Latham, G. P., & Yukl, G. A. (1975). Assigned versus participative goal setting with educated and uneducated woods workers. *Journal of Applied Psychology, 60*, 290–302.
- ²Lawrence, L. C., & Smith, P. C. (1955). Group decision and employee participation. *Journal of Applied Psychology, 39*, 334–337.
- ¹Lee, C. (1988). The relationship between goal setting, self-efficacy, and female field hockey team performance. *International Journal of Sport Psychology, 20*, 147–161.
- ¹Liden, R. C., Wayne, S. J., & Bradway, L. K. (1997). Task interdependence as a moderator of the relation between group control and performance. *Human Relations, 50*, 169–181.
- ¹Lin, S. (2003). *Relationship among conflict management styles, employees' job satisfaction and team effectiveness: A comparison between public and private hospitals in Taiwan* (Doctoral dissertation). Available from ProQuest Dissertations and Theses database. (UMI No. AAT 3090089)
- ¹Marta, S., Leritz, L. E., & Mumford, M. D. (2005). Leadership skills and the group performance: Situational demands, behavioral requirements, and planning. *Leadership Quarterly, 16*, 97–120.
- ³Matsui, T., Kakuyama, T., & Onglatco, M. L. U. (1987). Effects of goals and feedback on performance in groups. *Journal of Applied Psychology, 72*, 407–415.
- ¹McCarthy, M. (1978). Decreasing the incidence of "high bobbins" in a textile spinning department through a group feedback procedure. *Journal of Organizational Behavior Management, 1*, 150–154.
- ¹McGlaughlin, J. A. (2000). *An investigation of the effects of the provision of objective group development feedback on the development and productivity of work groups* (Doctoral dissertation). Available from ProQuest Dissertations and Theses database. (UMI No. AAT 9969920)
- ³Miles, J. A., & Klein, H. J. (2002). Perception in consequences of free riding. *Psychological Reports, 90*, 215–225.
- ²Mitchell, T. R., & Silver, W. S. (1990). Individual and group goals when workers are interdependent: Effects on task strategies and performance. *Journal of Applied Psychology, 75*, 185–193.
- ²Ohta, M. (1986). Self-control system of small groups: Perception of the probability of group goal attainment and evaluation of achievement level. *Psychologia: An International Journal of Psychology in the Orient, 29*, 80–90.
- ¹Park, G. (2006). *Emergence process of team goal orientation and team effectiveness* (Doctoral dissertation). Available from ProQuest Dissertations and Theses database. (UMI No. AAT 1444291)
- ²Pearson, C. A. L. (1987). Participative goal setting as a strategy for improving performance and job satisfaction: A longitudinal evaluation with railway track maintenance gangs. *Human Relations, 40*, 473–488. doi:10.1177/001872678704000801
- ²Podsakoff, P. M., MacKenzie, S. B., & Ahearne, M. (1997). Moderating effects of goal acceptance on the relationship between group cohesiveness and productivity. *Journal of Applied Psychology, 82*, 374–383. doi:10.1037/0021-9010.82.6.374
- ²Prussia, G. E., & Kinicki, A. J. (1996). A motivational investigation of group effectiveness using social-cognitive theory. *Journal of Applied Psychology, 81*, 187–198. doi:10.1037/0021-9010.81.2.187
- ⁴Reber, R. A., & Wallin, J. A. (1984). The effects of training, goal setting, and knowledge of results on safe behavior: A component analysis. *Academy of Management Journal, 27*, 544–560. doi:10.2307/256044
- ²Resick, C. J., & Bloom, A. J. (1998). Effects of goal setting on goal commitment, team processes, and performance. *Psychology: A Journal of Human Behavior, 34*, 2–8.
- ³Ronan, W. W., Latham, G. P., & Kinne, S. B. (1973). The effects of goal setting and supervision on worker behavior in an industrial situation. *Journal of Applied Psychology, 58*, 302–307.
- ⁴Rowe, B. J. (1981). Use of feedback and reinforcement to increase the telephone reporting of independent automobile appraisers. *Journal of Organizational Behavior Management, 3*, 35–40.
- ⁴Runnion, A., Johnson, T., & McWorther, J. (1978). The effects of feedback and reinforcement on truck turnaround time in materials transportation. *Journal of Organizational Behavior Management, 1*, 110–117.
- ³Saavedra, R., Earley, P. C., & Van Dyne, L. (1993). Complex interdependence in task-performing groups. *Journal of Applied Psychology, 78*, 61–72.
- ²Senecal, J., Loughhead, T. M., & Bloom, G. A. (2008). A season-long team-building intervention: Examining the effect of team goal setting on cohesion. *Journal of Sports and Exercise Psychology, 30*, 186–199.
- ¹Shaw, J. D., Duffy, M. S., & Stark, E. M. (2000). Interdependence and preference for group work: Main and congruence effects on the satisfaction and performance of group members. *Journal of Management, 26*, 259–279. doi:10.1177/014920630002600205
- ²Smith, K. G., Locke, E. A., & Barry, D. (1990). Goal setting, planning, and organizational performance: An experimental simulation. *Organizational Behavior and Human Decision Processes, 46*, 118–134. doi:10.1016/0749-5978(90)90025-5
- ³Stedry, A. C., & Kay, E. (1966). The effects of goal difficulty on performance: A field experiment. *Behavioral Science, 11*, 459–470. doi:10.1002/bs.3830110605
- ⁵Stephens, S. D., & Ludwig, T. D. (2007). Improving anesthesia nurse compliance with universal precautions using group goals and public feedback. *Journal of Organizational Behavior Management, 25*, 37–70. doi:10.1300/J075v25n02_02
- ⁵Stoerzinger, A., Johnson, J. M., Pisor, K., & Monroe, C. (1978). Implementation and evaluation of a feedback system for employees in a salvage operation. *Journal of Organizational Behavior Management, 1*, 268–280. doi:10.1300/J075v01n04_03
- ¹Tjosvold, D., Wong, A., Nibler, R., & Pounder, J. S. (2002). Teamwork and controversy in undergraduate management courses in Hong Kong: Can the method reinforce the message? *Swiss Journal of Psychology, 61*, 131–138.
- ¹Tjosvold, D., & Yu, Z. (2004). Goal interdependence and applying abilities for team in-role and extra-role performance in China. *Group Dynamics, 8*, 98–111.
- ¹Townsend, C. A. (2001). *Virtual teams: The relationship between organizational support systems and effectiveness* (Doctoral dissertation). Available from ProQuest Dissertations and Theses database. (UMI No. AAT 1405476)
- ¹Van de Vliert, E., & De Dreu, C. K. W. (1994). Optimizing performance by conflict stimulation. *International Journal of Conflict Management, 5*, 211–222.
- ⁵Van Leeuwen, E., & Van Knippenberg, D. (2002). How a group goal may reduce social matching in group performance: Shifts in standards for determining a fair contribution of effort. *Journal of Social Psychology, 142*, 73–86.

(Appendices continue)

- ⁶Van Vijfeijken, H., Kleingeld, A., van Tuijl, H., Algera, J. A., & Thierry, H. (2002). Task complexity and task, goal, and reward interdependence in group performance management: A prescriptive model. *European Journal of Work and Organizational Psychology, 11*, 363–383.
- ¹Van Vijfeijken, H., Kleingeld, A., Van Tuijl, H., Algera, J., & Thierry, H. (2006). Interdependence and fit in team performance management. *Personnel Review, 35*, 98–117.
- ³Voelker, M. I. (2003). *Effects of feedback and competition on behavior change, task strategy, and task performance in problem-solving groups* (Doctoral dissertation). Available from ProQuest Dissertations and Theses database. (UMI No. AAT 3093153)
- ⁵Wegge, J., Bipp, T., & Kleinbeck, U. (2007). Goal setting via videoconferencing. *European Journal of Work and Organizational Psychology, 16*, 169–194.
- ²Weingart, L. R., & Weldon, E. (1991). Processes that mediate the relationship between a group goal and group member performance. *Human Performance, 4*, 33–54.
- ¹Wekselberg, V. G., Goggin, W. C., & Collings, T. J. (1997). A multifaceted concept of group maturity and its measurement and relationship to group performance. *Small Group Research, 28*, 3–28.
- ¹Yu, C. (2005). *An I-P-O model of team goal, leader goal orientation, team cohesiveness, and team effectiveness* (Doctoral dissertation). Available from ProQuest Dissertations and Theses database. (UMI No. AAT 3202366)
- ²Zajonc, R. B., & Taylor, J. J. (1963). The effect of two methods of varying group task difficulty on individual and group performance. *Human Relations, 16*, 359–368.

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Call for Nominations

The Publications and Communications (P&C) Board of the American Psychological Association has opened nominations for the editorships of **Journal of Experimental Psychology: Animal Behavior Processes**, **Journal of Experimental Psychology: Applied**, **Neuropsychology**, and **Psychological Methods** for the years 2014–2019. Anthony Dickinson, PhD, Wendy A. Rogers, PhD, Stephen M. Rao, PhD, and Scott E. Maxwell, PhD, respectively, are the incumbent editors.

Candidates should be members of APA and should be available to start receiving manuscripts in early 2013 to prepare for issues published in 2014. Please note that the P&C Board encourages participation by members of underrepresented groups in the publication process and would particularly welcome such nominees. Self-nominations are also encouraged.

Search chairs have been appointed as follows:

- **Journal of Experimental Psychology: Animal Behavior Processes**, John Disterhoft, PhD, and Linda Spear, PhD
- **Journal of Experimental Psychology: Applied**, Jennifer Crocker, PhD, and Lillian Comas-Diaz, PhD
- **Neuropsychology**, Norman Abeles, PhD
- **Psychological Methods**, Neal Schmitt, PhD

Candidates should be nominated by accessing APA's EditorQuest site on the Web. Using your Web browser, go to <http://editorquest.apa.org>. On the Home menu on the left, find "Guests." Next, click on the link "Submit a Nomination," enter your nominee's information, and click "Submit."

Prepared statements of one page or less in support of a nominee can also be submitted by e-mail to Sarah Wiederkehr, P&C Board Search Liaison, at swiederkehr@apa.org.

Deadline for accepting nominations is January 10, 2012, when reviews will begin.