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# A Sequential Analysis of Procedural Meeting Communication: How Teams Facilitate Their Meetings

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*How do teams facilitate their own meetings? Unmanaged (or free) social interaction often leads to poor decision-making, unnecessary conformity, social loafing, and ineffective communication processes, practices, and products. The purpose of this paper is to investigate the potential benefits of procedural communication in team meetings. The role of procedural communication, defined as verbal behaviors that structure group discussion to facilitate goal accomplishment, was examined in 59 team meetings from 19 organizations. Meeting behaviors were videotaped and coded. Lag sequential analysis revealed that procedural meeting behaviors are sustained by supporting statements within the team interaction process. They promote proactive communication (e.g., who will do what and when) and significantly inhibit dysfunctional meeting behaviors (e.g., losing the train of thought, criticizing others, and complaining). These patterns were found both at lag1 and lag2. Furthermore, the more evenly distributed procedural meeting behaviors were across team members, the more team members were satisfied with their discussion processes and outcomes. For practice, these findings*

An earlier version of this paper was presented at the 96th Annual Convention of the National Communication Association in San Francisco, 2010. The lag1 (but not lag2) findings concerning H3c were mentioned in an earlier German publication (Kauffeld, 2007).

Nale Lehmann-Willenbrock, Ph.D., is Assistant Professor in the Department of Social and Organizational Psychology at VU University Amsterdam. She has published on trust in the workplace, meeting effectiveness, and dynamic behavioral processes in teams. Further research interests include emergent social influence, intercultural differences, and methodological advances in team interaction analysis. Joseph A. Allen, Ph.D., is Assistant Professor in the Department of Psychology at the University of Nebraska at Omaha. His publications include his work on workplace meetings, volunteer management, and emotional labor. Further research interests include cross-cultural differences in emotions and interaction processes as well as an interest in after-action review meetings in high reliability contexts. Simone Kauffeld, Ph.D., is Professor of Industrial/Organizational and Social Psychology at Technische Universität Braunschweig, Germany. She conducts field-study research on meeting effectiveness, team and consultant-client interaction processes, training transfer, and leadership in organizations. Correspondence to: Nale Lehmann-Willenbrock, Department of Social and Organizational Psychology, VU University Amsterdam, Van der Boechorststraat 11, 1081 BT Amsterdam, The Netherlands. Email: n.lehmann-willenbrock@vu.nl

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*suggest that managers should encourage procedural communication to enhance meeting effectiveness, and team members should share the responsibility of procedurally facilitating their meetings.*

*Keywords: Interaction Analysis; Lag Sequential Analysis; Meeting Effectiveness; Facilitation*



Team meetings are ubiquitous in contemporary organizations (e.g. McComas, 2003; Rogelberg, Allen, Shanock, Scott, & Shuffler, 2010; Tracy, 2007). On average, employees attend at least three meetings per week, with increasing time spent in meetings at the managerial level (Schell, 2010). However, the quality of all these meetings is evaluated as poor in 41.9% of the cases (Schell, 2010). Considering the amount of employee time spent on meetings, a pressing concern for both meeting leaders and meeting attendees is how these meetings can be more effective. In other words, what can employees do to create more efficient meetings?

A possible reason why many meetings fail to live up to expectations concerns the meeting procedure itself. Unmanaged (or free) social interaction often leads to poor decision-making, unnecessary conformity, social loafing, and ineffective communication processes, practices, and products (e.g. Janis, 1972; Sunwolf & Frey, 2005). Procedural communication (sometimes referred to as coordinating or structuring interaction) can be helpful in ameliorating these problems. It can assist group formation (e.g. Booth, 2000; Pike & Solem, 2000; West, 1999), manage diversity issues (e.g. Pendry, Driscoll, & Field, 2007), reduce conflicts (e.g. Littlejohn & Domenici, 2001), and improve decision-making communication (for an overview, see Sunwolf & Frey, 2005). Earlier work by Putnam (1983) shows that groups significantly differ in the ways they structure their interaction and that groups high in procedural order prefer goal focus and task implementation within their interaction processes. In short, procedural communication functions to organize the team's discourse and move it toward a group goal (cf. Kauffeld & Lehmann-Willenbrock, 2012; Sunwolf & Seibold, 1999).

One place where procedural communication can be found is in regular organizational meetings (Kauffeld & Lehmann-Willenbrock, 2012). Behaviors such as goal orientation or prioritizing are beneficial for both team and organizational outcomes. However, these recent findings also show that positive procedural meeting behaviors are outnumbered by negative procedural behaviors—losing the train of thought, getting "hung up" on details, or "rambling". These latter behaviors negatively impact both team and organizational outcomes (Kauffeld & Lehmann-Willenbrock, 2012).

The purpose of this paper is to investigate the potential benefits of procedural communication in team meetings. First, we discuss research on team meetings, highlighting the dearth of research on communication processes in team meetings. Then we review past research on procedural communication (albeit limited) to better

elucidate the role and impact of procedural communication in teams. Next we posit hypotheses concerning the positive impact of procedural communication in team meetings, code the interaction of 59 organizational decision-making teams, and examine the production and impact of group members' procedural statements in these meetings via lag sequential analysis. We specifically extend the theoretical work by Putnam (1983) by hypothesizing that procedural communication both facilitates supportive behaviors and inhibits dysfunctional behaviors in team meetings. Finally, we report the results of our analyses and address both theoretical and practical implications of our findings.



### *Team Meetings in the Workplace*

Research increasingly focuses on meetings as an important organizational phenomenon (e.g. Rogelberg, Leach, Warr, & Burnfield, 2006). Team meetings in particular offer the opportunity to study group processes in applied field settings. For example, Sonnentag (2001) describes meeting participation as a key process for meeting outcomes and organizational effectiveness alike. Her study also highlights the importance of meeting structure for participation and meeting effectiveness. In the health care context, Arber (2008) found that meetings significantly affected outcomes for the team members and for a team's clients. Van Praet (2009) describes interaction in team meetings as a manifestation of team performance. Despite the growing scientific interest in team meetings, however, there is still a pronounced lack of research on the communicative processes that constitute team meetings and impact meeting effectiveness and team outcomes. More specifically, little is known about how teams structure their meetings and how these communicative activities affect team meeting processes and outcomes. Previous research tends to focus on individuals' evaluations of their meetings, and how that impacts their subsequent attitudes and behaviors (e.g. Rogelberg et al., 2010), rather than the processes in the meetings that lead to such evaluations. To address this research gap and build on the work of Putnam (1979, 1983) concerning procedural communication, we now turn our attention to procedural meeting behaviors and their role within the team meeting process.

### *Procedural Behaviors in Team Meetings*

Previous research begins to suggest the importance of procedural behaviors in team meetings (e.g. Schultz, 1974, 1986). Schultz (1974, 1986) found that procedural statements—statements that focused on setting goals, giving directions, and summarizing—were important predictors of decision quality. Schultz and colleagues (Schultz & Ketrow, 1996; Schultz, Ketrow, & Urban, 1995) focused on the crucial role of the "critical reminder" who was trained to ask the group to slow down, to remain vigilant, to reconsider issues, and to address problems. Critical reminders were instructed to intervene whenever the group participants needed help in making a

more effective decision. Groups where critical reminders were present ultimately produced higher quality decisions than groups where such guidance was not available. Schulz et al. (1995) concluded that "the intervention by a reminder has the potential to help a group institute procedures known to produce choices having desired consequences" (p. 538).

Related work on group coordination also shows positive linkages between coordinating activities and group outcomes (Cohen, Ledford, & Spreitzer, 1996; Komaki, Desselles, & Bowman, 1989; Marks, Matthieu, & Zaccaro, 2001). In a thorough review of the literature, Wittenbaum, Vaughan, and Stasser (1998) argued that group coordination (i.e., the way in which groups synchronize their actions in order to successfully complete a task) is central to group effectiveness. Unfortunately, groups often forego explicit coordination planning unless induced to do so, tacitly assuming that synchronization will occur. Wittenbaum et al. (1998) concluded that "facilitating the successful coordination of group members may be the key ingredient to improving group performance" (p. 199) and called for more empirical research on the coordination process and its linkages to performance.

In short, past research has provided a definition of procedural communication as constituted in group interaction and focused on structuring the group's task discussion. Moreover, the amount of overall procedural communication in meetings has been linked to increased meeting satisfaction and more organizational effectiveness (Kauffeld & Lehmann-Willenbrock, 2012). However, to understand the functionality of procedural meeting behaviors as they occur embedded in meetings, we need to consider their effects *within* the meeting process. In other words, when a procedural behavior occurs in a meeting, what happens next?

To examine the interaction process within team meetings, we use a recently developed and validated coding scheme for team meeting processes (act4teams; e.g. Kauffeld & Lehmann-Willenbrock, 2012). The act4teams coding scheme builds upon the team processes literature (e.g. Cooke & Szumal, 1994; Huang, 2009; Okhuysen & Eisenhardt, 2002; Wittenbaum et al., 2004) as well as earlier classifications of intragroup interaction, such as interaction process analysis (IPA, Bales, 1950) or time-by-event-by-member pattern observation (TEMPO; Futoran, Kelly, & McGrath, 1989). It describes both functional and dysfunctional problem-solving processes in team interactions (see Kauffeld & Lehmann-Willenbrock, 2012, for details on the theoretical background of the act4teams coding scheme). Act4teams describes four facets of verbal meeting behavior: Procedural behaviors, problem-focused behaviors, action-oriented behaviors, and socioemotional behaviors. Positive procedural behaviors are aimed at structuring the meeting process (e.g. goal orientation, see Table 1), whereas negative procedural behaviors lead to a loss of structure. Problem-focused behaviors aim at analyzing problems, generating ideas, and developing solutions. Action-oriented behaviors focus on whether a team is willing to take responsibility for and actively try to improve their work versus denying such responsibility and complaining. Finally, socioemotional behaviors indicate the social relationships between team members including positive behaviors (e.g. support or giving feedback) and negative behaviors (e.g. criticizing or interrupting others) (see Table 1).

**Table 1** Meeting behaviors coding scheme.

| Procedural behaviors | Socioemotional behaviors | Action-oriented behaviors |
|---|---|---|
| Positive: | Positive: | Positive: |
| *Goal orientation* | *Providing support* | *Action planning* |
| pointing out/leading back to the topic | agreeing to ideas or suggestions, ideas | agreeing upon tasks to be carried out after the meeting |
| *Clarifying* | | |
| ensuring contributions are to the point | | |
| *Procedural suggestion* | Negative: | Negative: |
| suggestions for further procedure | *Criticizing/running someone down* | *Complaining* |
| | | emphasizing the negative status quo, pessimism |
| *Procedural question* | disparaging comments about others | |
| questions about further procedure | | |
| *Prioritizing* | | |
| emphasizing/focusing main topics | | |
| *Time management* | | |
| reference to (remaining) time | | |
| *Task distribution* | | |
| delegating tasks during the discussion | | |
| *Visualizing* | | |
| using flip chart and similar tools | | |
| *Summarizing* | | |
| summarizing results | | |
| Negative: | | |
| *Losing the train of thought* | | |
| examples irrelevant to the goal, monologs | | |

Note: Individual coding categories are printed in bold italics. Excerpt from the act4teams coding scheme for team meeting interaction. For details, see Kauffeld and Lehmann-Willenbrock (2012).

Recent studies illustrate the empirical validity of this coding scheme for investigating meeting behavior (see Kauffeld & Lehmann-Willenbrock, 2012). Specifically, the internal consistencies (Cronbach's $\alpha$) of the subfacets within the coding scheme ranged from 0.60 for solution-focused statements to 0.86 for positive procedural statements. Further, the meeting behaviors identified with the act4teams coding scheme showed significant links to relevant outcomes (i.e., evidence of criterion-related validity). For example, positive meeting behaviors (e.g. solution-focused statements or structuring statements) were positively correlated with meeting satisfaction, subsequent team productivity, and organizational success. In contrast, dysfunctional or negative behaviors (e.g. losing the train of thought, criticizing others, or complaining) showed significant negative links with these team and organizational outcomes beyond the team meeting (Kauffeld & Lehmann-Willenbrock, 2012). Next, we focus on positive procedural statements within team meeting processes, and the ways in which these statements may trigger specific behaviors within the team interaction flow. Table 2 shows examples of positive procedural statements in meeting interactions.

### *Support for Procedural Statements in the Team Interaction Process*

Procedural communication *processes* in teams have been examined in earlier work by Putnam (1983). She argued that verbal messages by team members are manifestations of expectations about team interaction, which in turn shape the modus operandi of the team (Putnam, 1979, 1983). Procedural statements from this perspective are "meta-messages that direct the mechanics of group activity by reflecting, integrating, and coordinating group talk with past behaviors and future contingencies" (Putnam, 1983, p. 466). Although we follow this core tenet of Putnam's description of procedural communication, our conceptualization of procedural statements within the team interaction process is slightly different from Putnam's earlier work. Whereas Putnam's (1983) description of procedural communication includes statements about how tasks should be handled and when specific steps of a team project should be implemented, we explicitly focus on

**Table 2** Samples of positive procedural meeting communication.

| Sample statement | act4teams® code |
|---|---|
| All right, back to the topic. | Goal orientation |
| So essentially you're saying that… | Clarifying |
| Let's talk about … first. | Procedural suggestion |
| Should I write that down? | Procedural question |
| That's the most important issue we're facing. | Prioritizing |
| And we should come to a decision; we only have five minutes left. | Time management |
| Anna, please take notes on the flip chart. | Task distribution |
| (A writes on flip chart) | Visualizing |
| Ok, so far we've talked about …. | Summary |

procedural communication that steers and manages the team discussion at a metalevel. This conceptualization aligns with recent work on team meeting communication in organizations (e.g. Kauffeld & Lehmann-Willenbrock 2012; Kauffeld & Meyers, 2009) in which procedural communication is clearly distinguished from problem-solving interaction or action-oriented communication (which includes statements about task implementation).

Putnam (1983) further argued that procedural communication shapes a team's work climate because procedural statements that order team activity eventually produce group norms. Building on this idea, we will examine how these norms may be shaped through team interaction processes. Previous meetings research shows that supporting statements, which are part of the socioemotional facet of meeting communication (Kauffeld & Lehmann-Willenbrock, 2012), play an important role in shaping team interaction processes. For example, supporting statements can not only sustain dysfunctional complaining patterns in teams (e.g. Kauffeld & Meyers, 2009), but can also sustain positive, proactive patterns in meeting interactions (Lehmann-Willenbrock, Meyers, Kauffeld, Neininger, & Henschel, 2011). If teams indeed build norms for procedural communication over time, as proposed by Putnam (1983), we would expect socioemotional support for procedural statements within the team interaction process. We thus presume:

> H1: At the utterance level, procedural meeting behaviors trigger supporting statements.

### *Effects of Procedural Statements on Proactive versus Dysfunctional Meeting Behaviors*

Recent research on organizational meetings has identified proactive statements as specific communicative behaviors in meetings that strongly impact meeting satisfaction and subsequent team productivity (Kauffeld & Lehmann-Willenbrock, 2012). Proactive behaviors include signaling interest in change, taking responsibility, and planning concrete steps to be carried out after the meeting. Put simply, successful team meetings are distinguished by these proactive meeting behaviors, not simply nice chats. When teams talk about who does what when, they are more likely to implement their ideas. Unfortunately, previous research also shows that despite their strong positive impact on meeting success, proactive meeting behaviors are rare. An average team meeting contains 69 counteractive statements such as complaining and only 17 proactive statements (Kauffeld & Lehmann-Willenbrock, 2012). Thus, proactive meeting behaviors are important for meeting success, yet they are a rare phenomenon. This makes it all the more important to identify facilitating behaviors within the team meeting process that encourage proactive behavior. Previous survey research underscores the importance of structuring communication for meeting effectiveness (Sonnentag, 2001). We expect that the benefit of structuring communication (i.e., procedural behaviors), should also be observable within the process of team meeting interaction. Specifically, we are interested in a potential facilitating effect of procedural statements for proactive meeting behaviors.

Procedural communication can serve several important functions for teams. For example, Farkas (1999) describes procedural discourse as "how-to" communication that is aimed at guiding others through a task. Proactive meeting behaviors, such as taking responsibility and concrete action planning, as identified in previous process-analytical research (e.g. Lehmann-Willenbrock et al., 2011), require a progression from problems to solutions and finally to more concrete planning (cf. Kauffeld & Lehmann-Willenbrock, 2012). Arguably, when the discussion is guided or facilitated, being proactive should become easier. Procedural communication can fulfill this facilitative function. Thus, helping the team stay on topic through procedural communication should pave the way for proactive behavior. We hypothesize:

> H2: Procedural meeting behaviors significantly promote proactive behaviors within the team meeting process.

In addition to promoting proactive meeting behaviors and as a direct extension of the work by Putnam (1983), procedural communication may also help diminish or even eliminate dysfunctional meeting behaviors. Putnam tended to focus on the facilitative and structuring effects of procedural communication. However, recent research shows that many organizational meetings suffer from disproportionately frequent dysfunctional behaviors such as complaining, criticizing others, or getting "off track", and losing the train of thought (Kauffeld & Lehmann-Willenbrock, 2012; Myrsiades, 2000). These dysfunctional meeting behaviors are problematic because they are negatively linked to meeting satisfaction, team outcomes, and even organizational success (Kauffeld & Lehmann-Willenbrock, 2012). Moreover, they tend to occur in cycles or recurring patterns (Lehmann-Willenbrock & Kauffeld, 2010; Lehmann-Willenbrock et al., 2011). To date, little is known about potential remedies for dysfunctional meeting behaviors. However, one previous study on complaining cycles suggests that procedural statements can inhibit these negative behaviors (Kauffeld & Meyers, 2009). One possible explanation for this inhibitive effect concerns social norms. Meeting participants will likely adapt their behavior to the specific social meeting context, based on what they perceive to be the norm for meeting behavior. Social norms can be distinguished into descriptive norms (i.e., beliefs about how others in the respective social group are behaving) and injunctive norms (i.e., beliefs how one should behave; e.g. Cialdini, Reno, & Kallgren, 1990). Communication scholars have argued that descriptive and injunctive norms are often congruent, as in meetings:

> For example, individuals who attend a formal meeting may notice that, because most others are silent and attentive (descriptive norms), they are required to act in a similar manner and that they will incur social sanctions if they do not comply (injunctive norms). (Lapinski & Rimal, 2005, p. 127)

When these considerations are related to the context of procedural behaviors in meetings, the potential to inhibit dysfunctional behaviors becomes readily apparent. When a participant leads back to the topic, clarifies a point, or makes a suggestion for proceeding further in the meeting, others will perceive this as a descriptive norm and will consequently refrain from behaviors such as to straying off subject, criticizing

others, or engaging in complaining. In this manner, procedural behaviors may serve an inhibitive or buffering function against dysfunctional meeting behaviors within the meeting process. We hypothesize:

> H3a: Procedural meeting behaviors inhibit a loss of structure in the meeting.
> H3b: Procedural meeting behaviors inhibit criticizing and disparaging behaviors.
> H3c: Procedural meeting behaviors inhibit complaining.

Finally, we are also interested in the link between procedural meeting behaviors and participants' evaluation of the meeting. We investigate two outcomes—satisfaction with the meeting process and satisfaction with the meeting outcome overall. Previous research has linked task structuring to improved team performance (e.g. Mesmer-Magnus & DeChurch, 2009). This suggests that procedural meeting behaviors (as a specific form of task structuring) could lead to improved team meeting effectiveness. However, to date it is not clear whether procedural behaviors are a shared phenomenon or whether they are mainly contributed by few individual team members. The little previous research on procedural meeting behaviors has focused on the team level only (Kauffeld & Lehmann-Willenbrock, 2012; Kauffeld & Meyers, 2009). Arguably, statements produced by only one or two team members that constantly remind the team to stay organized, or follow a certain order, or to move in a certain direction, may be viewed as overbearing by the rest of the team. Research on team empowerment and collective leadership in teams shows that team performance improves when responsibilities are shared across team members (e.g. Hiller, Day, & Vance, 2006; Seibert, Wang, & Courtright, 2011). This could apply to procedural communication—in terms of a microprocess manifestation of shared leadership—as well. To clarify this issue, we aim to determine if the even distribution or sharedness of procedural meeting behaviors across team members would result in more satisfied team members. That is, whereas having only a few members organizing and reminding may be perceived as overbearing, having many (or all) members doing so may create a greater sense of purpose direction and lead to more satisfied members. We hypothesize:

> H4: The more procedural statements are evenly distributed amongst group members, the more satisfied they will be with the discussion (a) process and (b) outcome.

## Method

### *Sample*

Fifty-nine teams from 19 medium-sized established German enterprises from the automotive supply, metal, electrical, chemical, and packaging industries were examined. Both industrial and administrative employees participated in the study. There were no status differences within the teams (i.e. no supervisors or subordinates). Five to seven team members participated in each meeting. When a team consisted of more than seven members, the management (in consultation with the team members) was asked to select seven members for the meeting, based on the

availability and work load of the team members. Most of the participants were male (90.4), which represents the industries in the sample. Participants' age was assessed in five categories: 21–30 years (21.3%), 31–40 (42.6%), 41–50 (22.9%), and 51 and above (11.5%). Approximately 2.2% did not state their age.

### *Team Meetings*

Data were collected during regular team meetings in the participating organizations. To keep conditions largely constant, meeting topics were required to meet two criteria. First, they had to be related to actual daily work to stimulate participants' interest in contributing to the discussion. Second, prior to data acquisition, the supervisor as well as the team had to agree that it was important to work on that particular agenda. The meetings were videotaped. There was no supervisor present. Confidentiality was guaranteed to ensure realistic data. Comments noted on the videotapes such as backbiting the absent supervisor and answering cell phone calls publicly during the discussion indicated that the participants believed their comments to be safe.

### *Unitizing and Coding Process*

A unit was defined as a communicative statement which, in context, could be understood by another member as equivalent to a single simple sentence (Bales, 1950). The unitizing task was completed by a trained coder who identified the units based on a detailed set of unitizing rules. Unitizing was performed using Interact software (Mangold, 2010) which allows marking of video sections within a digitalized video.[1]

Coding was performed using the act4teams coding scheme for team meetings (e.g. Kauffeld & Lehmann-Wilenbrock, 2012) and INTERACT software (Mangold, 2010). The coding units relevant for the present research are shown in Table 1. To assess inter-rater reliability, six randomly selected coded discussions were used. Inter-rater reliability was calculated using Cohen's Kappa (Cohen, 1960), yielding a value of $\kappa$ = 0.90 across all coding units. Because the length of the meetings varied between 60 and 90 minutes, the number of codes per category was divided by the length of the video in minutes and then multiplied by 60 for standardization.

### *Sequential Analysis*

Lag sequential analysis (Sackett, 1979, 1987) was performed to examine interaction processes and mutual dependencies (Sackett, 1979, ; see also Lehmann-Willenbrock et al., 2011). This method analyzes temporal patterns in sequentially recorded events of groups or individuals (Bakeman & Gottman, 1997; Bakeman & Quera, 1995). To determine how often one behavior was followed by another, interaction sequence matrices were generated. Transition frequencies were determined for each pair of statements.

First-order transitions or interacts occur when one statement directly follows the previous one (lag1). Second-order transitions occur when a statement is followed by the next-but-one statement (lag2). Using the transition frequencies (behaviors or statements following each other at lag1 and lag2) as a basis, transition probabilities are computed by dividing the cell frequencies by the cell sums. The cell sums show how often the first event is found in the sequence. The cell frequencies represent how often each event occurs in the sequence. The transition probability matrix is derived from the transition frequency matrix. These transition probabilities are conditional probabilities that indicate the probability that a specific event B occurs after a particular given event A (Benes, Gutkin, & Kramer, 1995). In other words, they describe the likelihood that B is triggered by A within the interaction process.

Since the transition probabilities are confounded with the base rates of the events that follow, a high transition probability is not per se an indication of an above-chance transition frequency. To avoid this problem and to examine whether the transition probability differs from the unconditional probability for the event that follows, Bakeman and Gottman (1997) proposed the application of a statistical check, such as a *z*-statistic. Sequential analysis including lag1 and lag2 *z*-values were computed using INTERACT software (Mangold, 2010).

### *Distribution Measure*

To determine the degree of distribution of the procedural statements, we chose the $AD_M$ measure by Burke, Finkelstein, and Dusig (1999). This measure calculates the average deviation from the mean of all individuals in a unit (in our case, in a group) as follows:

$$AD_M = \frac{\sum_{i=1}^{N} |x_i - \bar{x}|}{N}$$

In this formula, $x_i$ represents the individual score and $\bar{x}$ the overall score for that variable within the respective group. Compared to other measures of dispersion, this measure is more easily interpretable from original scores (Burke & Dunlap, 2002; Dawson, Gonzalez-Roma, Davis, & West, 2008). With this formula, we were able to determine the degree to which each member of the group contributed procedural statements, and consequently, the degree of distribution of these types of statements in each group. The lower the $AD_M$ score of a group, the less dispersion of procedural contributions, and, therefore, the greater the sharedness. To determine the upper-limit cut-off for this index, Burke and Dunlap (2002) proposed specific heuristics for research employing Likert-type scales, percentage scales, and dichotomous items (see Burke & Dunlap, 2002, for detailed descriptions). However, none of these heuristics applied to this data because there were no standard response ranges (an individual could make any number of procedural statements). Instead, we chose one standard deviation above the overall mean of the $AD_M$ values as an

upper-limit point beyond which we decided sharedness would no longer be considered a viable characteristic of the group.

*Perceived meeting effectiveness.* To examine the effects of procedural communication on perceived meeting effectiveness, participants were asked to fill out a short questionnaire following the discussion. All items were rated on a 5-point Likert-type scale (1 = completely disagree; 5 = completely agree). Satisfaction with the meeting process was measured with four items (Cronbach's $\alpha$ = 0.85). Satisfaction with the meeting outcome was measured with eight items (Cronbach's $\alpha$ = 0.97. All items can be found in Appendix 1.

## Results

### *Frequency of Procedural Meeting Behaviors*

Table 3 shows the descriptive statistics for each of the types of procedural statements. Both at the group and individual levels, the most frequent positive procedural contribution was visualizing (i.e., suggesting information be placed on a flipchart or written down). *Procedural suggestions* and *clarifying* statements were the next most frequently produced categories. Interestingly, it appears that time management statements were least frequent, which may say something about how groups communicate, or fail to communicate, about time allotment (cf. Gersick, 1988). Table 3 also shows that teams differed in the range of production of procedural behaviors (from a minimum of 3.52 to a maximum of 304.57 procedural meeting behaviors per hour). Clearly, some groups produced a great number of these statements while other groups were notably more reserved.

**Table 3** Descriptive data for procedural statements at the group level (*N*=59).

| | Group-level minimum | Group-level maximum | Group-level mean | Group-level SD |
|---|---|---|---|---|
| Goal orientation | 0.00 | 26.74 | 3.165 | 3.994 |
| Clarifying | 0.00 | 44.35 | 8.000 | 8.930 |
| Procedural suggestion | 0.00 | 93.91 | 9.934 | 16.652 |
| Procedural question | 0.00 | 37.17 | 4.223 | 7.253 |
| Prioritizing | 0.00 | 16.96 | 3.255 | 3.204 |
| Time management | 0.00 | 11.09 | 0.994 | 1.989 |
| Task distribution | 0.00 | 20.22 | 2.124 | 3.811 |
| Visualizing | 0.00 | 66.21 | 11.690 | 17.349 |
| Summarizing | 0.00 | 29.03 | 4.572 | 5.718 |
| Sum of procedural meeting behaviors | 3.52 | 304.57 | 51.51 | 58.54 |

Note: Data refer to a one-hour period to account for differing lengths of discussion.

*Functionality of Procedural Meeting Behaviors within the Meeting Process*

Sequential analysis revealed the role of procedural meeting behaviors within the meeting process. First, we examined autocontingencies (behaviors following themselves) for the procedural behaviors under study. Similar to Putnam (1983), we found strong autocontingencies for all of the procedural behaviors under study: $z = 6.46$ for goal orientation; $z = 6.94$ for clarifying; $z = 20.99$ for procedural suggestions; $z = 5.82$ for procedural questions; $z = 5.41$ for prioritizing; $z = 22.35$ for time management; $z = 4.97$ for task distribution; $z = 22.67$ for visualizing; and $z = 12.19$ for summarizing statements immediately following each other at lag1 ($p < 0.01$, respectively). Beyond these immediate patterns, we still found significant autocontingencies at lag2 ($z = 7.41$ for goal orientation; $z = 8.09$ for clarifying; $z = 9.12$ for procedural suggestions; $z = 11.85$ for procedural questions; $z = 8.26$ for prioritizing; $z = 14.02$ for time management; $z = 9.23$ for task distribution; $z = 20$, 94 for visualizing; and $z = 16.11$ for summarizing statements at lag2; $p < 0.01$, respectively).

To test our first hypothesis, we examined the lag1 sequences of procedural communication followed by supporting statements. Indeed, several procedural statements generated significant support within the meeting interaction process at lag1 ($z = 9.05$ for support for clarifying statements; $z = 3.50$ for procedural questions; $z = 2.88$ for summarizing statements, $p < 0.01$, respectively; $z = 2.51$ for procedural suggestions, $p < 0.05$). These findings are illustrated in Figure 1. However, goal orientation, prioritizing, time management, and task distribution generated no significant support at lag1. Visualizing even inhibited support ($z = -6.92$, $p < 0.01$). At lag2, we found no significant support for procedural statements. Taken together, these findings only somewhat support H1.

Second, we examined whether procedural meeting behaviors could promote proactive behaviors within the meeting. The lag1 sequential analysis results for "action planning" showed that this was indeed the case. As depicted in Figure 1, seven out of the nine procedural meeting behaviors were followed by action planning significantly above chance. For example, an action planning statement was significantly more likely after a team member made a procedural suggestion ($z = 2.09$, $p < 0.05$) or when a team member showed time management in the meeting ($z = 3.44$, $p < 0.01$). At lag2, we still found three significant procedural-action planning sequences ($z = 5.85$ for prioritizing; $z = 3.50$ for time management; and $z = 2.97$ for visualizing). These findings largely support H2.

Next, we used sequential analysis to identify whether procedural meeting behaviors can also inhibit negative, dysfunctional behaviors in meetings. The results for "losing the train of thought" showed a significant inhibitive function of eight out of the nine procedural meeting behaviors. Specifically, losing the train of thought was significantly less likely after goal orientation statements ($z = -2.87$), after clarifying ($z = -4.05$), procedural suggestions ($z = -5.27$), procedural questions ($z = -3.80$), prioritizing ($z = -3.20$), task distribution ($z = -2.60$), visualizing ($z = -5.60$), and after summarizing statements ($z = -2.72$; $p < 0.01$, respectively). At lag2, we still found significant inhibitory sequences for clarifying ($z = -3.01$ for clarifying; $z = -4.64$ for

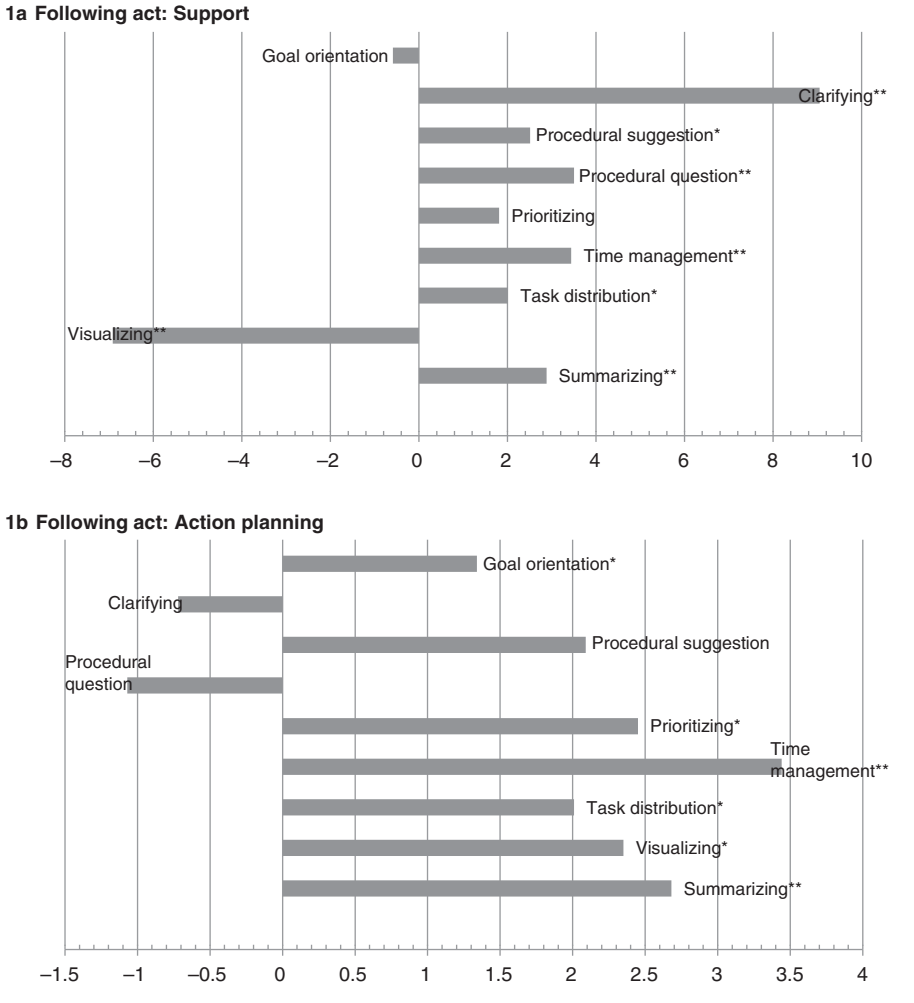


**Figure 1** Sequential analysis results for procedural communication followed by support (a) and followed by action planning behavior (b) at lag1. Sequences with *z*-values above 1.96 or below −1.96, respectively, are defined as significant. $^{*}p < 0.05$; $^{**}p < 0.01$.

procedural suggestions; $z = -2.64$ for procedural questions; and $z = -5.34$ for visualizing; $p < 0.01$). These findings support H3a.

Moreover, supporting H3b, seven out of the nine procedural meetings behaviors significantly inhibited criticizing behavior ($z = -2.08$ for goal orientation; $z = -4.29$ for clarifying statements; $z = -5.27$ for procedural suggestions; $z = 3.12$ for procedural questions; $z = -2.43$ for prioritizing; $z = -4.42$ for visualizing; and $z = -2.86$ for summarizing, $p < 0.01$, respectively). Lending further support to H3b, we also found significant sequences of procedural meeting behaviors inhibiting criticizing at lag2 ($z = -2.58$ for clarifying; $z = -5.09$ for procedural suggestions; $z = -3.40$ for procedural questions; $z = -3.68$ for visualizing, $p < 0.01$; $z = -2.52$ for task distribution, and $z = -2.30$ for summarizing, $p < 0.05$).

Finally, procedural meeting behaviors also inhibited complaining behavior, thus supporting H3c. Complaining was significantly less likely after goal orientation ($z = -3.12$), clarifying ($z = -3.91$), procedural suggestions ($z = -4.76$), procedural questions ($z = -2.60$), prioritizing ($z = -2.79$), task distribution ($z = -2.54$), visualizing ($z = -4.83$), and after summarizing statements ($z = 3.45$; $p < 0.01$, respectively). Moreover, we found several significant inhibitory effects of procedural meeting behaviors on complaining at lag2 ($z = -2.78$ for goal orientation; $z = -2.84$ for clarifying; $z = -4.76$ for procedural suggestions; $z = -3.15$ for procedural questions; and $z = -5.32$ for visualizing, $p < 0.01$, respectively). Figure 2 illustrates our findings concerning H3a through c.

### *Procedural Behaviors and Meeting Satisfaction*

Our final hypothesis posited that the more procedural statements were distributed among group members, the greater would be their association with meeting satisfaction outcomes. The original $AD_M$ scores were multiplied by $-1$ before being entered into the correlation analyses so that a higher score represented a higher degree of distribution (cf. Dawson et al., 2008). Figure 3 illustrates the distribution of procedural statements across all teams. Prior to testing the effect of the degree of distribution ($AD_M$) on meeting satisfaction, we examined whether there were any significant differences in the predictor and outcome variables related to the different branches and organizations in our diverse sample. Whereas the $AD_M$ scores did not differ significantly across branches ($\beta = 0.19$, ns), we did find significant differences between the branches in the two outcome variables (satisfaction with the meeting process and outcome). To address this issue, we controlled for the influence of the different branches in our following regression analysis by adding branch as an additional predictor in the regression. Controlling for branch, the results of regression analysis showed that the degree of distribution of procedural communication positively predicted participants' satisfaction with the meeting process ($\beta = 0.30$; $p < 0.05$) as well as their satisfaction with the meeting outcome ($\beta = 0.37$; $p < 0.01$), thus supporting H4. Interestingly, when we used overall procedural meeting behaviors as predictors for meeting satisfaction, the relationship was no longer positive. This suggests that having a lot of procedural meeting behaviors does not help per se; rather, the distribution of procedural behaviors across members of a meeting is an important factor for promoting meeting satisfaction.

## Discussion

This study examined the functionality of procedural behaviors during team interaction processes in organizational meetings. First, the analyses illustrate that at the utterance level, procedural meeting behaviors are often followed by supporting statements from others in the meeting. Second, lag sequential analysis revealed that procedural meeting behaviors promote proactive communication (e.g. who will do what and when) as found at lag1 and lag2. Third, procedural meeting behaviors significantly inhibited dysfunctional meeting behaviors (losing the train of thought,

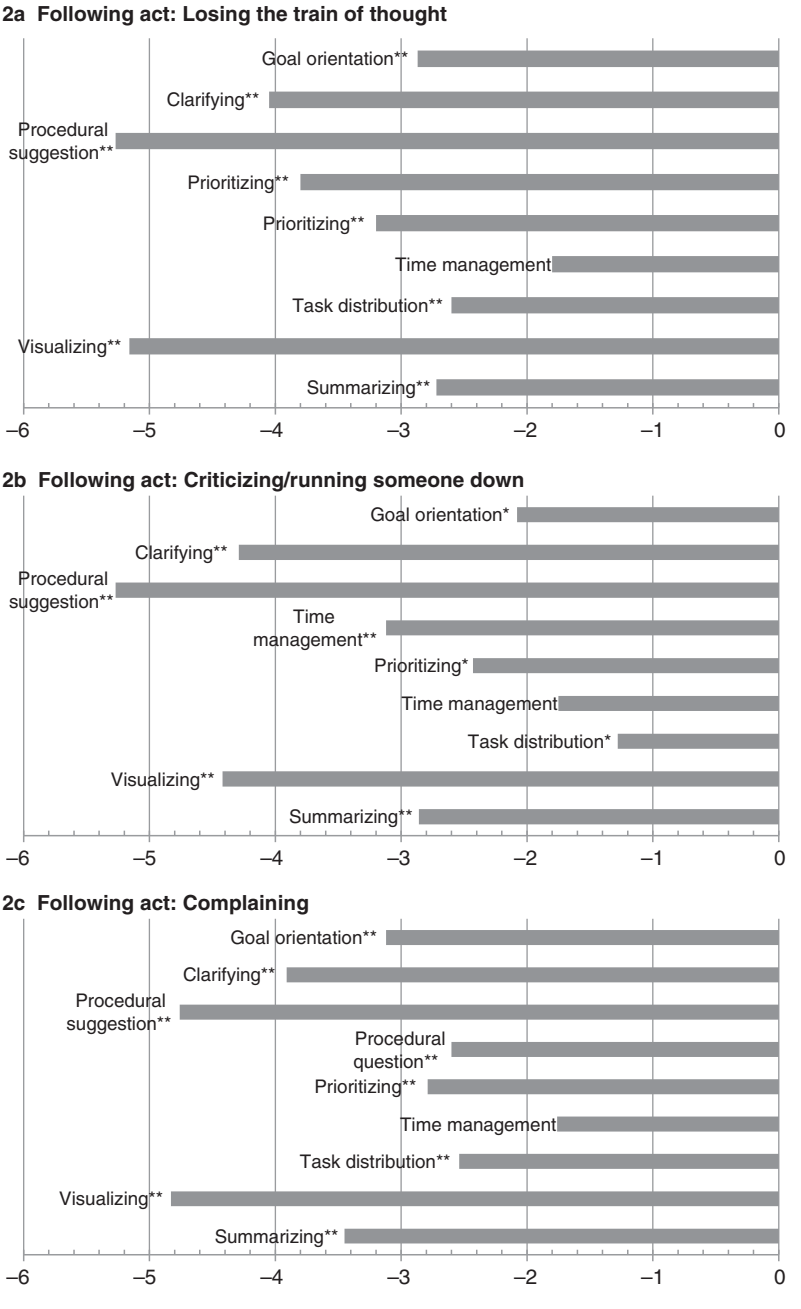


**Figure 2a–c** Lag1 sequential analysis results showing how procedural meeting behaviors inhibit losing the train of thought (a), criticizing (b), and complaining (c). Sequences with *z*-values lower than −1.96 are defined as significant and imply inhibitory effects (e.g., after a "goal orientation" statement, losing the train of thought was significantly less likely). $^{*}p < 0.05$; $^{**}p < 0.01$.

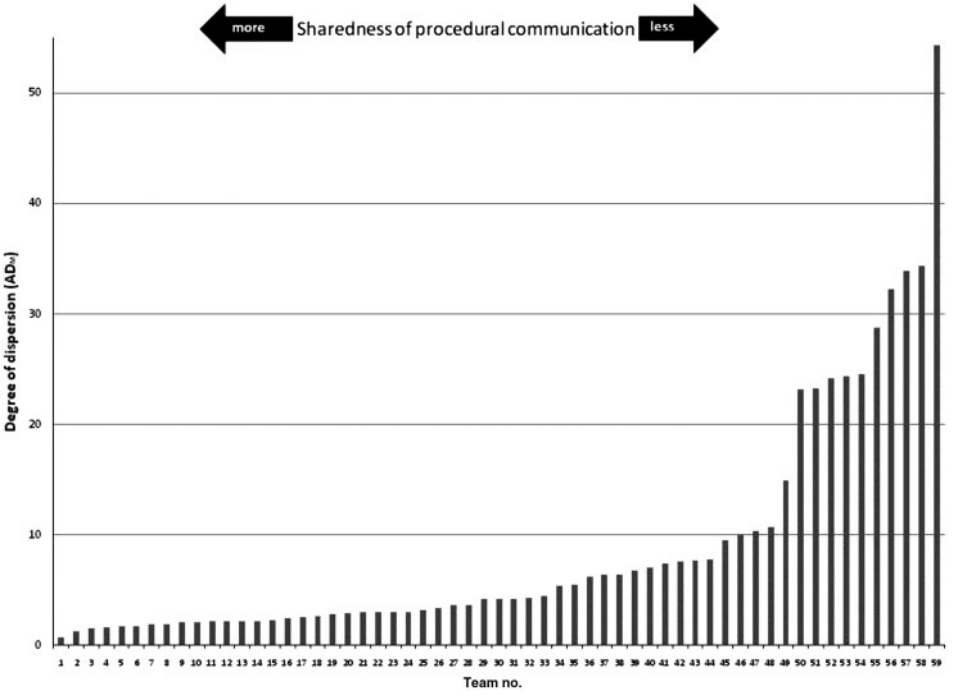


**Figure 3** Distribution of net procedural communication. $AD_M$ values, 59 teams.

criticizing others, and complaining). Fourth, the distribution of procedural meeting behaviors (but not procedural behaviors alone) was linked to perceived meeting satisfaction. Next, we discuss implications for meetings research, future directions, and implications for team meeting practice.

### *Implications for Meetings Research*

This study took a behavioral process approach to studying team meeting behaviors as they occur in natural organizational settings. Our findings underscore the importance of studying the fine-grained processes within a meeting for understanding meeting effectiveness. Specifically, we employed sequential analysis to understand the functionality of procedural communication in meetings. Our findings that procedural communication promotes supportive statements and other proactive meeting behavior in the team meeting process seems especially important in light of the paucity of proactive behavior in meetings. Although proactive behaviors such as showing interest in change, taking on responsibility, or deciding on action steps to be carried out after the meeting are important for meeting outcomes and team performance, they tend to be largely outnumbered by negative behaviors such as complaining and denying responsibility (Kauffeld & Lehmann-Willenbrock, 2012; Lehmann-Willenbrock & Kauffeld, 2010; Myrsiades, 2000). Similarly, in the present sample we found an average of 11 proactive statements compared to 54 counteractive

statements per meeting (calculated across all groups, per 60-minute period). The finding that procedural behaviors can actively promote proactive behavior thus offers promising opportunities for creating more efficient meeting processes and outcomes. Meetings research should continue to explore procedural communication as a tool for promoting good team meeting practices and thus facilitating team performance (Baran, Shanock, Rogelberg, & Scott, 2012; Kauffeld & Lehmann-Willenbrock, 2012; Sonnentag & Volmer, 2009).

Furthermore, procedural communication significantly inhibited dysfunctional meeting behaviors within the team interaction process. Behaviors such as losing the train of thought, criticizing others, and complaining should not be taken lightly. Each of these behaviors has been linked to significant decreases in team performance and organizational effectiveness (Kauffeld & Lehmann-Willenbrock, 2012). Moreover, dysfunctional meeting behaviors tend to occur in recurring patterns or cycles (e.g. Lehmann-Willenbrock & Kauffeld, 2010). Although process-analytical research on organizational meetings is still sparse, the impact of dysfunctional meeting behaviors appears to be pronounced and negative behaviors can even outweigh positive behaviors in meetings (Kauffeld & Lehmann-Willenbrock, 2012). Our finding that procedural communication can inhibit dysfunctional meeting processes offers an important opportunity for relief, in terms of buffering against the frequency, and negative effects of dysfunctional meeting behaviors.

Additionally, our findings indicate that procedural communication is generally distributed among members. The majority of the groups showed fairly high degrees of procedural statement distribution. Only a small number of the groups (approximately 15%) showed little sharedness in procedural contributions (i.e., one standard deviation above the mean). Finding that procedural interaction was produced and shared across members in many teams suggests that it is indeed emergent in group discussion and that teams do attempt to self-facilitate their decision-making interactions. In addition, the link between procedural communication and perceived meeting effectiveness depended on the degree to which procedural meeting behaviors were shared. In other words, procedural communication does not necessarily increase meeting satisfaction per se; rather, team members need to share this responsibility in order to reach better evaluations of their meetings. We found that the greater the distribution of procedural communication in these teams, the greater was team members' satisfaction with the discussion process and outcomes. That is, member satisfaction was higher when more of the team members took on the task of leading and structuring the group discussion. The frequency of procedural statements alone was not associated with team members' evaluations of meeting effectiveness. This finding qualifies and extends earlier work on the effects of procedural meeting behavior (Kauffeld & Lehmann-Willenbrock, 2012). It may well be that when one (or just a few) member takes on the procedural role, he/she is perceived as bossy, micro-managing, or overly dominant. Unfortunately, our data does not allow us to identify whether those who dominated the procedural communication role were also the meeting leader or supervisor on the team. Thus, more research is needed to determine how distributed procedural communication

might be perceived differently than more singular contributions. In addition, future research should explore links between these statements and other outcomes (e.g. team productivity and quality of team decisions).

### *Limitations and future directions*

As with any investigation, we recognize limitations to this study. First, our sample was predominantly male. While this is a characteristic of the majority of the industries represented in our sample, it does limit the generalizability of our findings. The same generalizability limitation holds true culturally since all members of these groups were German. Future research should broaden the sampling frame to address this limitation. Second, we did not examine individual differences behind the distribution patterns in the sample of groups we selected. For example, in some of the groups, there were individuals with notably higher procedural contributions than others. Future research should investigate whether these team members have more knowledge about facilitative communication, or perhaps have specific qualifications or character traits that contribute to being a facilitator. Also, these particular team members could be perceived as dominant, bossy, and micromanagers which could impact the current results. Third, our satisfaction measures of discussion processes and outcomes were self-reports. In the future, we hope to be able to link procedural communication with more direct group outcomes such as quality of decisions or team productivity.

One specific future direction worth discussing stems from the results suggesting that procedural communication, especially when evenly distributed across the team, promotes more satisfying team meetings. This suggests that one behavior that meeting leaders may want to promote more generally in their meetings is procedural communication. Future research could begin to investigate the key leader behaviors that facilitate good meeting outcomes (i.e., meeting satisfaction and effectiveness). The current finding suggests procedural communication may be one key leader behavior, and further investigations may suggest other key communicative behaviors that leaders should promote in their meetings.

### *Practical Implications*

The current findings provide several practical implications for managers who lead meetings, employees who attend meetings, and organizational leaders who want improved productivity at the team and individual level. First, managers can directly apply the findings by both facilitating their meetings better by using more procedural statements while also recognizing that they cannot be the only ones to do so. Encouraging open participation by employees that is goal directed and maintains the aims of the meeting in general appear to have an important impact on meeting satisfaction. Also, future research is needed to investigate the types of behaviors that managers can engage in to promote others engagement in procedural behaviors in meetings.

Second, employees who attend meetings should recognize their importance in meeting success. That is, the findings suggest that the distribution of procedural behaviors in meetings is essential to improving satisfaction with meeting process and outcomes. In other words, employees should not simply blame the meeting leader for the bad meeting. Taking ownership of one's meetings and assisting with the facilitation process is essential for all meeting attendees. The better the distribution of such behaviors the more satisfying the meeting experience. Future research will need to see if such distribution of behaviors also impacts overall meeting effectiveness and further substantiate the demand for employee personal ownership of meeting success.

Third, organizational leaders may want to initiate an evaluation program where both meeting leaders and meeting attendees evaluate their level of participation in meetings. Further, occasionally engaging in meeting audits where an observer attends and counts both the number of and distribution of procedural behaviors may be a good way to gage the success of such initiatives and identify growth areas within various teams across the organization. This sort of initiative could be part of a larger program of continuous improvement across the organization as inefficiencies are identified and replaced with more effective processes.

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## Note

[1] We recognize that unitizing typically requires two coders and reliability analysis using Guetzkow's *U*. When using software and live video to unitize data, however, units are marked according to time rather than words. Unitizing and coding was performed with INTERACT software, which allows cutting individual behavioral events directly from the video and assigning the speaker and behavioral code to it. It is not feasible for two unitizers to cut the videotape at the exact same nanosecond. Hence, units were identified by only one coder prior to the double-rating process for evaluating inter-rater reliability. We constructed very clear unitizing rules by specifying sense units consistent with Bales (1950) and by including specific behavioral examples for each code in the act4teams coding handbook. An English or German copy of the coding handbook can be obtained from the first author upon request.

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**Appendix 1. Questionnaire items.**

| | |
|---|---|
| Satisfaction with the meeting process | (1) Overall, I am satisfied with the meeting process. |
| | (2) I would be happy to have another team meeting with the same group composition. |
| | (3) The team meeting has brought about new ideas. |
| | (4) The team meeting was time well spent for me. |
| Satisfaction with the meeting outcome | (1) Overall, I am satisfied with the meeting outcome. |
| | (2) The results of the meeting are clear and unambiguous. I know what I need to do now. |
| | (3) The meeting results can be applied in practice. |
| | (4) Implementing the results of the meeting will lead to measurable cost savings. |
| | (5) Implementing the results of the meeting will lead to increased customer satisfaction. |
| | (6) Implementing the results of the meeting will foster collaboration. |
| | (7) Implementing the results of the meeting will improve the workflow. |
| | (8) Implementing the results of the meeting will lead to higher product quality. |