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How fun are your meetings?

Investigating the relationship between humor patterns in team interactions and team performance

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Abstract

Research on humor in organizations has rarely considered the social context in which humor occurs. One such social setting that most of us experience on a daily basis concerns the team context. Building on recent theorizing about the humor—performance association in teams, this study seeks to increase our understanding of the function and effects of humor in team interaction settings. Specifically, we examine behavioral patterns of humor and laughter in real teams. We videotaped and coded humor and laughter during 54 regular organizational team meetings. Performance ratings were obtained immediately following the team meetings as well as at a later time point from the teams' supervisors. Lag sequential analysis identified humor and laughter patterns occurring above chance (e.g., a joke followed by laughter, followed by another joke). At the behavioral unit level within the team interaction process, humor patterns triggered positive socioemotional communication, procedural structure, and new solutions. At the team level, humor patterns (but not humor or laughter alone) positively related to team performance, both immediately and two years later. Team-level job insecurity climate was identified as a boundary condition: In low job insecurity climate conditions, humor patterns were positively related to performance, whereas in high job insecurity climate conditions, humor patterns did not relate to team performance. The role of job insecurity as a boundary condition persisted at both time points. These findings underscore the importance of studying team interactions for understanding the role of humor in organizations and considering team-level boundary conditions over time.

Key words: Humor; team meetings; interaction patterns; team performance; lag sequential analysis

Why do we joke and laugh at work (and let's hope that we do)? From an evolutionary perspective, humor and laughter have likely evolved as group behaviors because they promote group cohesion (Gervais & Wilson, 2005; Van Vugt & Kameda, 2013). Humor functions as a social lubricant (Romero, 2005) and provides an important relationship maintenance tool for group members (Fine & de Soucey, 2005; Robinson & Smith-Lovin, 2001). We most often experience humor in the context of others: People are 30 times more likely to laugh in a group than in isolation, suggesting a contagion pattern of humor in group settings (Johnson, 2007). One such group setting that most of us experience on a daily basis concerns the team context (e.g., Kozlowski & Ilgen, 2006). A recent meta-analysis concludes that future research should explicitly target the role of humor in organizational teams and among co-workers (Mesmer-Magnus, Glew, & Viswesvaran, 2012). On a similar note, Romero and Cruthirds (2006) propose that understanding the role of humor could promote effective management. However, our understanding of humor in team settings remains limited, as previous research has often neglected the context in which humor is produced and reacted to (Westwood & Johnston, 2013). Although humor becomes more relevant in contemporary organizations where especially the younger generation of employees expects work to be fun, creative, and collaborative (Levine, 2005; Romero & Pescosolido, 2008), research on the role of humor in real organizational settings remains sparse (cf. Lynch, 2002; Romero & Pescosolido, 2008; Mesmer-Magnus et al., 2012).

As humor and laughter are socially embedded within the context of ongoing teams, we focus on team meetings as a specific context for studying humor and laughter. An estimated 11 million meetings take place during a typical work day in the United States alone (Newlund, 2012). In addition to being an increasingly frequent activity at work, meetings can offer a window into team dynamics within organizations (Van Vree, 2011) and as such provide a rich

context for studying humor in teams. Additionally, the team meeting may be one of the few locations where all team members interact one with another, thereby making it the ideal context for studying humor as well as many other team interaction processes (Lehmann-Willenbrock, Meyers, Kauffeld, Neining, & Henschel, 2011; Kauffeld & Lehmann-Willenbrock, 2012). Moreover, humor in the meeting context is embedded in the temporal flow of verbal interactions by different team members. As such, team meetings provide an opportunity for examining what happens after humor, in terms of the team interaction processes that get triggered by humor at the micro-level of conversational moments over time.

Joking is often referential, i.e., team members understand a particular joke within the group's established culture (Fine & de Soucey, 2005). Almost all groups exhibit some form of repeated humor involving joking references (Holmes & Marra, 2002). Moreover, positive, successful humor requires not only an attempt to be funny, but also reactions by the audience (i.e., laughter). Presumably, humor as an expression of positive affect carries the potential to trigger team interaction patterns (cf. Lehmann-Willenbrock, Meyers, Kauffeld, Neining, & Henschel, 2011). Indeed, previous research suggests that humor occurs in specific sequences of behavior, or behavioral patterns, in which humor begets laughter and/or more humor (Glenn, 1989; Consalvo, 1989). When a team member makes a humorous statement or tells a joke, he or she invites others to participate. The team member who told the joke may laugh first; if others join, shared laughter results (Glenn, 1989). Initial humorous phrase or jokes are often brought up again later, sparking another laughing episode (Consalvo, 1989). Not only laughter, but also humor tends to occur in "temporally contiguous bursts" (Scogin & Pollio, 1980). Ullian (1976) found that employees joked with others just as often as they were joked with. Joking remarks seemed to be followed by similar joking statements. Similarly, Robinson

and Smith-Lovin (2001) report contagion effects of humor, such that humorous statements beget more humorous statements within team interaction processes. These previous findings suggest that humor needs to be examined in terms of behavioral patterns of humor and laughter that develop within (team) interaction settings, rather than individual experiences.

In addition to identifying how humor patterns develop within team interactions, the current study investigates how humor patterns relate to important team outcomes. Although some previous research indicates that humor in team interactions can promote positive team outcomes (Robinson & Smith-Lovin, 2001), we currently do not understand how performance benefits of humor unfold in real teams to date. In this paper, we take first steps toward understanding how humor unfolds in team interaction patterns and explore how humor patterns relate to team performance over time. Building on previous theorizing about humor and team effectiveness (Romero and Pescosolido, 2008), this study seeks to increase our understanding of how humor works in team interaction settings. First, we examine the role of humor in the context of organizational teams, a largely unexplored phenomenon. Second, we shed light on humor patterns by examining real team interaction behaviors over time. Third, we identify both immediate and longitudinal relationships between the frequency of humor patterns and supervisors' ratings of team performance. Fourth, we examine team-level job insecurity perceptions as a potential boundary condition for these effects. Finally, we discuss managerial implications for reaping the benefits of humor in teams.

Humor patterns in team interactions

Organizational scholars largely agree that humor is a basic element of interaction (for an overview, see Romero & Cruthirds, 2006). Humor can be defined as "any communicative instance which is perceived as humorous" (Martineau, 1972, p. 114). This definition implies that

the humor is successful, in terms of being perceived as amusing rather than offensive (for a discussion of negative humor, see Malone, 1980; Meyer, 2000). In this paper, we explicitly refer to positive and successful humor, in line with recent theorizing about humor as a positive team resource (Romero & Pescosolido, 2008). More specifically, in the organizational setting, (successful) "humor consists of amusing communications that produce positive emotions and cognitions in the individual, group, or organization" (Romero & Cruthirds, 2006, p. 59). Thus, we focus on positive, well-intended humor in this study. Positive humor is distinct from mean humor (humorous statements that are intentionally negative) or put-down humor (i.e., sarcastic or mean comments). The latter may still produce laughter, but are not likely to produce positive emotions. In fact, disparaging or sarcastic humor in team interactions, aimed at criticizing others, has shown negative relationships to team productivity (Kauffeld & Lehmann-Willenbrock, 2012). In the current study, we therefore focus exclusively on the phenomenon of positive, well-intentioned humor in teams. We specifically refer to humor in team contexts, in line with definitions of humor as a communicative element and a positive team resource.

To account for the results of humor, we need to consider the interaction context surrounding the humorous remarks, in terms of the sequence of behaviors during which humor occurs (Fine, 1984; Robinson & Smith-Lovin, 2001). Understanding the sequence of behaviors that constitute humor patterns or episodes provides valuable information on how team members respond to humor attempts. Humor may occur in the absence of patterns, such as subsequent laughter (i.e. some jokes are not funny); thus, we focus on those humor instances that create patterns of interaction. Moreover, such patterns need to be identified in order to understand how and why humor relates to relevant team performance outcomes.

Taken together, previous findings suggest that humor and laughter occur as temporally contiguous patterns of interaction in teams. However, to the best of our knowledge, no previous research has actually captured the behavioral patterns assumed to exist when humor occurs in real teams embedded in organizational contexts. These patterns comprise sequences of behavior (humor and laughter) that occur significantly above chance (see Lehmann-Willenbrock et al., 2011; Stachowski, Kaplan, & Waller, 2009, for examples). We expect humor and laughter to form specific behavioral sequences, or patterns, within the team interaction flow. Humor patterns could be built out of sequences of humor-laughter or humor-humor (i.e., two humorous remarks in a row). Specifically, we hypothesize the occurrence of humor patterns as follows:

H1: Within team interaction processes, sequential humor patterns develop.

Team interaction processes after humor patterns

Romero and Pescosolido (2008) propose that successful organizational humor can enhance team communication processes. For example, humor can enhance listeners' attentiveness and facilitate persuasion (e.g., Gruner, 1976; Lyttle, 2001). This may be especially helpful in the context of team meetings, where team members need to build on each other's contributions and take initiative to develop and implement new ideas (Kauffeld & Lehmann-Willenbrock, 2012). Moreover, previous findings from communication research suggest that humor as a micro-level process can help facilitate meeting interaction (Beck, Littlefield, & Weber, 2012).

Previous research suggests that positive socioemotional behavior—such as humor—occurs in patterns and enhances team interaction processes (Beck & Keyton, 2009; Lehmann-Willenbrock, Allen, & Meinecke, 2014). Specifically, Lehmann-Willenbrock, Allen, and Kauffeld (2013) found that positive socioemotional behaviors, in this case supportive statements, in team meetings sustained effective procedural communication in team meetings that is

necessary for positive meeting outcomes. Moreover, theoretical assumptions about the benefits of humor for team communication (Romero & Pescosolido, 2008) should hold true at the micro-level of temporal team interaction behaviors as well. As such, we expect that humor, as a type of socioemotional behavior in meetings, can serve as a trigger to subsequent functional communication. We are particularly interested in the effects of humor *within* the team interaction process, i.e., in the communication instances or lags that immediately follow humor patterns within temporal team interaction processes. Focusing on what follows humor patterns within such team interactions, we hypothesize:

H2: Within temporal team interaction processes, humor patterns trigger functional communication in subsequent lags.

Humor patterns and team performance

We focus on team performance as an expression of team effectiveness for two reasons. First, team productivity is often the most salient feature of team effectiveness (Romero & Pescosolido, 2008). Second, our focus on team performance can help recover humor from its current status as an "unsung hero in peoples' day to day affective [organizational] lives" (Robert & Wilbanks, 2012, p. 1093) and highlight the benefits of humor behaviors in the workplace.

Only a few studies have examined a potential relationship between humor and performance outcomes. Avolio, Howell, and Sosik (1999) found a positive connection between employees' ratings of supervisors' use of humor and managerial performance. Similarly, Priest and Swain (2002) asked employees to recall good or bad leaders and rate their use of humor, and found that good leaders were reported to use significantly more humor. Although these previous findings refer to leaders rather than teams and do not account for the interaction context in which humor and laughter occur, they suggest that humor could foster team effectiveness.

Because humor is an essentially social, context-driven phenomenon (e.g., Robinson & Smith-Lovin, 2001), an examination of the potential relationship between humor and team performance should be based on observations of humor and laughter in team interaction contexts, rather than reports of individual experiences. This is consistent with recent research and theory concerning interactive team cognition (see Cooke, Gorman, Myers, & Duran, 2013) which emphasizes team interaction as the key ingredient for team processes necessary for successful performance. Similarly, the team interaction context surrounding a humor occurrence can play an important role. For example, sometimes when a person tells a joke or tries to be funny, the humor attempt falls flat and no laughing occurs (i.e., failed humor, see Romero & Pescosolido, 2008). In the absence of a laughter response, the likelihood of continued humor attempts on the part of the individual diminishes and likely has a different impact on team performance than when the humor attempt is reinforced (by laughter or additional humor) and a pattern develops. Thus, any humor-performance relationship in team settings should be due to humor-laughter patterns within the team interaction process (Cooke et al., 2013), rather than the frequency of individual humor. We presume:

H3: Humor patterns are positively related to team performance.

The role of job insecurity climate

Although humor holds the promise of alleviating stress, reducing conflict, and promoting team performance, there may be boundary conditions for the positive effect of humor in team settings (see also Romero & Pescosolido, 2008). Team-level perceptions of job insecurity present one rather salient boundary condition or moderating factor, especially during challenging economic situations for organizations. Specifically, perceptions of job insecurity have become particularly salient in recent years with organizational downsizing (Kivimaki, Vahtera,

Elovainio, Pentti, & Virtanen, 2003), economic struggles (Irwin, 2013), and other sources of concern for employees' job security in the long-term (Sverke, Hellgren, & Naswall, 2002). In essence, it may be particularly difficult for teams to enjoy the benefits of humor in their team interactions when they are constantly aware of the tenuous nature of their employment situation.

Perceived job insecurity has been defined as employees' "concern about the future permanence of the job" (Van Vuuren & Klandermans, 1990, p. 133). Employees who are concerned about the future of their job are often preoccupied with this concern such that deteriorating psychological health, job withdrawal, and negative employee attitudes typically follow (e.g., Dekker & Schaufeli, 1995; Debus, Probst, König, & Kleinmann, 2012; Huang, Zhao, Niu, Ashford, & Lee, 2013; Mohr, 2000; Sverke et al., 2002). Meta-analytic findings also show that job insecurity negatively relates to performance outcomes (Cheng & Chan, 2008).

Previous research, however, has focused almost entirely on job insecurity at the individual level (see Sora, De Cuyper, Caballer, Peiró, & De Witte, 2013, for an exception) and some previous (individual-level) findings suggest that job insecurity limits the benefits of positive resources. Specifically, König and colleagues found that employees' perceived communication quality were more strongly related to self-rated performance when job insecurity was low, rather than high (König, Debus, Häusler, Lendenmann, & Kleinmann, 2010). Because humor can be considered a positive resource (e.g., Robert & Wilbanks, 2012), we argue that job insecurity can function as a boundary condition in the humor—performance relationship as well. That is, under conditions of high job insecurity, humor will no longer positively relate to performance because the insecurity becomes a job demand that absorbs the resource benefits of positive workplace interactions in the form of humor in meetings.

When operationalized as team job insecurity climate (Sora et al., 2013) and building upon organizational support theory (Rhoades & Eisenberger, 2002), it is believed that job insecurity is a good indicator of the lack of feelings of support and would likely inhibit the positive benefits from humor on performance behavior. People individually and in teams would filter their behavior more readily in order to feel more in control and avoid making interpersonal mistakes that could justify termination from the job. Specifically, if a team was constantly aware of the fact that their jobs were tenuous at best (i.e., high job insecurity), jokes in that context likely took on a different meaning. Instead of facilitating team unity and performance, they may heighten awareness of organizational concerns relative to the economy thus further distracting team members from task performance. Thus, we would expect that in a secure job climate, humor is beneficial to team performance and in an insecure job climate, humor may not relate to team performance as strongly. Our final hypothesis posits:

H4: Job insecurity climate moderates the relationship between humor patterns and team performance, such that the positive relationship between humor patterns and performance is stronger when job insecurity climate is low (i.e., when teams feel secure in their jobs).

Method

Data were gathered during a large longitudinal field research project. Participating teams were situated either in the manufacturing departments or in the assembly line process of two industrial organizations in Germany. Although the research project was fully endorsed by the union councils and company management, participation was voluntary. Participants were guaranteed that their data would remain confidential at all times during and after the project.

Sample

A total of 54 teams ($N = 352$ employees) participated in this study. Participants' age ranged from 18 to 59 years ($M = 34.99$, $SD = 10.85$). 90 % of the sample were male, which is characteristic of these industrial settings. Organizational tenure ranged from 0 to 44 years ($M = 10.70$, $SD = 9.14$). The majority of the participants had completed an apprenticeship (79.3 %). 4.9 % had a college or university degree, and 4.1 % had no vocational training.

Coding humor and laughter in meeting interaction

To obtain behavioral data on the use and effects of humor, we videotaped regular team meetings (one meeting per team). These meetings took place as part of the continuous improvement process (CIP, e.g., Liker, 2006) implemented in both organizations. As part of the CIP, teams regularly meet at least once a month for approximately one hour to discuss their work process, identify any problems or obstacles, and come up with ideas for improvement. These meetings are organized by the teams themselves. Supervisors are generally not present during the meetings. We asked participants to ignore the camera, which was placed at the end of their rectangular meeting tables in order to cause as little distraction as possible. Observations such as negative remarks about (absent) supervisors or participants leaving the room during the meeting indicate that the videotaping was largely ignored by participants. The length of the meetings ranged from 20 to 65 minutes ($M = 47.41$; $SD = 10.31$). Team meeting interactions were coded using the act4teams team interaction scheme and INTERACT software (Mangold, 2010). Within the act4teams scheme, we focused our analysis on codes for problem-solving behavior, positive procedural behavior, and positive socioemotional statements. Humor is a distinct behavioral category situated in the positive socioemotional facet of team communication. Negative humor such as put-down humor or sarcasm is coded with a different behavioral code ("criticizing"; see

Kauffeld & Lehmann-Willenbrock, 2012, for more details on the coding scheme). A subset of our data was coded twice by separate coders, in order to establish inter-rater reliability ($\kappa = .81$).

Survey measures

We asked the teams' supervisors to rate team performance immediately after the meeting (t1) and again approximately two years later (t2), using the following items adapted from Kirkman and Rosen (1999): "The team reaches their (quantitative) targets"; "The team exceeds their qualitative targets"; and "The team continuously improves their efficiency" (Cronbach's $\alpha = .63$ at t1 and $\alpha = .68$ at t2). Job insecurity was measured in a reduced sample from one of the two organizations ($N = 29$ teams) after the meeting with three items focusing on perceptions of the likelihood of losing one's job (Borg & Elizur, 1992; see also Staufenbiel & König, 2011). A sample item was, "Thinking of losing my job makes me worry" (Cronbach's $\alpha = .93$; $r_{wg} = .82$ across all teams). For all survey items, the answering format ranged from 1 (completely disagree) to 7 (completely agree).

Control variables

We controlled for demographic characteristics of the teams (number of women in each team, age, and team members' average organizational tenure) as well as the team size in the meeting and the length of each team meeting. Moreover, we controlled for the organization (coded as 0 or 1) in all analyses.

Analysis strategy

Upon coding the videotaped meetings, we performed a lag sequential analysis to identify potential humor patterns. Lag sequential analysis analyzes behavioral interdependencies and temporal patterns in sequentially recorded events of groups or individuals (e.g., Bakeman & Quera, 2011; see also Lehmann-Willenbrock et al., 2011, 2013, for applications of this method).

To determine how often one behavior was followed by another, interaction sequence matrices were generated. Transition frequencies were determined for each pair of statements. Lag1 transitions occur when one statement directly follows the previous one. Lag2 transitions occur when a statement is followed by the next-but-one statement. Based on the frequency matrix of these transitions at lag1 and lag2, transition probabilities are derived that indicate the probability that a specific behavior B occurs after a particular given behavior A within the interaction process (Benes, Gutkin, & Kramer, 1995). In other words, they describe the likelihood that behavior B is triggered by A. To test whether any transition probability differs from the unconditional probability for the event that follows, we calculated z -values using INTERACT software for lag1 and lag2. At either lag, z -values larger than +1.96 or smaller than -1.96 indicate that the respective sequence is statistically significant. Afterwards, we calculated the overall frequency of humor patterns per team and tested longitudinal relationships with team performance via regression analysis. Finally, we calculated an interaction term between the number of humor patterns per team and the aggregated measure of perceived job insecurity to test for moderating effects. All analyses were performed at the team level.

Results

Lag sequential analysis

Across all team meetings, we indeed identified statistically significant lag1 sequences: *humor-laughter* ($z = 77.83$), *laughter-humor* ($z = 26.87$), and *humor-humor* ($z = 17.58$; $p < .01$, respectively). Moreover, the lag2 sequence *humor-...-humor* was statistically significant ($z = 23.39$, $p < .01$). Taken together, these findings represent the following humor patterns: *humor-laughter-humor* as well as *humor-humor-humor*. H1 was supported.

Upon establishing the hypothesized humor patterns in the data, we recoded our pooled data set (across all team meetings) such that humor patterns represented a single behavioral event. Next, we ran a lag sequential analysis to explore the effects of humor patterns on subsequent behaviors within the team interaction process. As depicted in Figure 1, humor patterns significantly triggered several important problem-solving behaviors both at lag1 and at lag2. After humor patterns, procedural behaviors such as procedural suggestions ($z = 4.53$), goal orientation ($z = 2.71$ and $z = 3.71$), or summarizing ($z = 4.60$) were significantly more likely. Positive socioemotional behaviors were also triggered by humor patterns at lag1 ($z = 3.66$ for offering praise; $z = 3.66$ for encouraging participation). Importantly, at lag2, humor patterns also promoted statements about new ideas or solutions ($z = 3.18$) as well as questions ($z = 2.66$). Although these findings are exploratory in nature, they indicate that humor patterns indeed increased functional communication behaviors within the team interaction process, thus lending support to H2.

Regression analyses

Table 1 shows the means, standard deviations, and intercorrelations of all variables. In order to connect the sequential analysis results to our outcomes of interest, we identified the frequency of humor patterns per team meeting. In line with H3, linear regression analysis showed that the amount of humor patterns at t1 positively related to team performance both immediately and over time ($\beta = .33, p < .05$ at t1 and $\beta = .35, p < .05$ at t2; see Table 2). Interestingly, when we considered the frequency of humor or laughter alone, neither significantly related to team performance (at t1, $\beta = .18$ for humor and $\beta = .22$ for laughter; at t2, $\beta = .24$ for humor and $\beta = .29$ for laughter, n.s., respectively). Only humor patterns showed significant relationships with team performance, lending further support to H3.

We used grand-mean centering to standardize all control and predictor variables prior to testing interaction effects (see Dawson, 2014). We found a significant interaction effect on team performance both at t1 ($\beta = -.45, p < .05$) and at t2 ($\beta = -.47, p < .05$; see Table 3), such that humor patterns were positively related to team performance at t1 and at t2 specifically when perceived job insecurity was low as opposed to high. Figure 1 illustrates these interaction effects. Simple slopes analyses showed significant results at high levels of the moderator (+1SD; $t = 3,111, p < .01$ at t1 and $t = -2,382, p < .05$ at t2) as well as at low levels of the moderator (-1SD; $t = -2,547, p < .05$ at t1 and $t = 2,932, p < .05$ at t2). Taken together, these findings support H4.

Discussion

This study addressed three core gaps in the literature on positive humor in the workplace. First, we explored how humor patterns develop during real team interactions in organizations by videotaping and coding regular team meetings in two organizations. Using lag sequential analysis, we further found that humor patterns triggered functional behaviors in the following communicative instances, such as procedural statements, positive socioemotional statements, and new ideas. Second, building on theoretical assumptions about humor effects on team performance (Romero & Pescosolido, 2008), we hypothesized and found that these humor patterns meaningfully related to team performance both immediately and over time, highlighting the potential of humor as a positive team resource. Importantly, we showed that humor patterns, but not humor attempts by themselves, related to team performance. Third, we identified team-level job insecurity climate as a pivotal boundary condition behind the humor patterns—performance relationship at both time points. As hypothesized, we found a positive relationship between humor patterns and team performance in low as opposed to high job insecurity climate conditions, both immediately and over time.

Theoretical implications

Our results provide several key implications for theory concerning humor in the workplace and for the context teams find themselves in. First, our study sheds light on the role of positive humor in teams and by co-workers, a previously unexplored phenomenon (see Mesmer-Magnus et al., 2012). Our results underscore the need to study humor as it occurs in social contexts, rather than studying individual experiences. We found that humor patterns, but not humor alone, were meaningfully connected to relevant team performance outcomes, both immediately and across time. This finding aligns with theoretical arguments that humor is a socially embedded phenomenon that unfolds in human interactions (e.g., Romero & Cruthirds, 2006; Romero & Pescosolido, 2008). Additionally, at the micro-level of temporal communicative sequences, we found that humor serves as a triggering mechanism for functional procedural and socioemotional behaviors. Moreover, at Lag2, humor patterns also promoted new ideas within the team interaction process. Consistent with previous research (Lehmann-Willenbrock et al., 2013), these findings imply micro-level communicative mechanisms by which humor impacts team functioning and perhaps team attitudes not exclusive to performance.

Second, we found that humor patterns persisted under conditions of high or low job insecurity climate, but their impact on team performance changed. This has theoretical implications for the way that individuals and teams process the insecurity climate relative to their work activities (Sora et al., 2013). Specifically, in low job insecurity climate conditions, feelings of safety are generally positive, which aligns well with the generally positive humor operationalized here (Romero & Pescosolido, 2008). However, in high job insecurity climate conditions, the relatively unsafe feelings appertaining to perceived job insecurity are contradictory to the positive humor patterns experienced. This may create dissonance within the

individual and among team members. Similar to research on emotional labor (e.g., Hochschild, 1983), dissonance of this nature drains cognitive resources, thereby impacting the ability of employees to fully engage in their work (e.g., Hülshager & Schewe, 2011). Coping with this dissonance implies cognitive load, requires effort, binds resources, and can become a burden. Although this is an implication relating to dissonance theory (Festinger, 1957), the current study does not overtly take a cognitive dissonance framework, thus future research is needed to fully investigate this possibility.

Limitations and directions for future research

Several limitations need to be considered. First, we used lag sequential analysis to study humor patterns in team interactions. We focused on lag1 and lag2 sequences, because each increase in lags requires substantially larger amounts of data at the behavioral transition level (see Bakeman & Gottman, 1986, for a calculation of minimum data point requirements per lag). Moreover, sequential analysis cannot account for nonstationarity or differences in effects over time (e.g., humor patterns may develop in later rather than earlier phases of a team meeting) or for sampling unit heterogeneity except through parallel analyses of subsamples of the data (see Chiu & Khoo, 2005, for a detailed criticism of sequential analysis). Although our findings shed important first insights into humor patterns and their relationship with team performance, future research should address these limitations (e.g., via Statistical Discourse Analysis; Chiu, 2008).

Second, we intentionally limited our investigation to positive rather than put-down or sarcastic humor. Indeed, humor was followed by laughter in the majority of the cases our sample, which suggests that the expressed humor was perceived as funny. However, team members may have laughed out of politeness in some cases. Moreover, we did not distinguish between different styles of positive humor (e.g., affiliative, self-enhancing, or self-defeating humor; Romero &

Cruthirds, 2006). Future research should examine both positive and negative humor in team interaction settings. Moreover, in addition to verbal humor, future research can investigate nonverbal humorous acts, as well as the role of non-intentional humor.

Third, our sample was mostly male, German, and comprised of teams with long team tenure and low fluctuation (i.e., team members were with the same teams for years on end). Whereas the latter enabled us to meaningfully connect earlier team interaction patterns to later team performance, it remains to be seen how humor patterns are formed and relate to team performance in newly formed teams or in teams where member composition changes. Moreover, although we gathered data at multiple time points, our research design does not permit causal inferences. Future research using an experimental design could tease apart the causal relationships between humor and performance. Future research could also examine how the presence of supervisors in meetings might affect humor patterns. Finally, findings on substantial intercultural differences in team interaction processes (Lehmann-Willenbrock et al., 2014) suggest that the way humor patterns develop and relate to team effectiveness may differ across cultural settings. Future research should pursue this idea.

Practical implications

First, managers may need to acknowledge when humor can be helpful and when it can be hurtful. That is, understanding the context that their team is embedded will help them to know when it is appropriate to joke and when such jokes could diminish performance. Second, when possible, managers may consider trying to make teams feel safe about their jobs. Although it is important to not be disingenuous to the reality of the difficulties that teams are facing in light of organizational and economic challenges, it is also important to point out when teams should not be concerned. For example, some teams may be so central to the success and function of the

organization, no matter what the economic climate may be like, they are likely safe. Third, managers may need to consider team-level issues such as job insecurity climate. This requires additional effort to collect surveys or engage in other processes to measure these concepts (e.g., via focus groups). However, given the connection between team interactions, such as humor patterns, and team performance, such managerial effort seems warranted.

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Table 1
Means, standard deviations, and intercorrelations

	<i>M</i>	<i>SD</i>	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
(1) Organization													
(2) Team size in the meeting	6.17	.99	-.05										
(3) Meeting length (in minutes)	47.41	10.31	-.08	.56**									
(4) Number of women in the team	.57	1.18	-.41**	.06	.07								
(5) Team-level age	35.61	4.73	-.24	.14	-.03	.23							
(6) Team-level organizational tenure	9.29	5.08	.20	-.02	-.10	-.19	.38**						
(7) Observed humor per team meeting	15.50	10.14	-.24	.23	.16	.22	.01	-.08					
(8) Observed laughter per team meeting	18.20	15.30	-.46**	.20	.24	.29*	-.10	-.16	.79**				
(9) Team-level job insecurity climate	3.98	1.03	-	.16	-.06	-.01	.25	.08	.03	.05	(.93)		
(10) t1 Team performance	5.15	.95	-.41**	-.12	-.02	.11	.12	.13	.19	.27	-.24	(.63)	
(11) t2 Team performance	5.39	.96	-.26	-.19	-.01	.30*	.02	-.08	.20	.28	-.28	.81**	(.68)

Note. Pearson's correlations (two-tailed); all variables at the team level. Humor and laughter calculated as overall frequencies of behaviors per team meeting. $N = 54$ for demographic and team meeting behavior variables (humor and laughter); $N = 31$ for job insecurity (only measured in one organization); $N = 45$ for t1 team performance and $N = 46$ for t2 team performance ratings. No descriptives shown for organization (binary dummy variable). Cronbach's alpha values in the diagonal in parentheses, where applicable. ** $p < .01$.

Table 2
 Main effects of humor patterns on team performance at t1 and t2

Model	Team performance at t1					Team performance at t2				
	R^2	ΔR^2	B	SE_B	β	R^2	ΔR^2	B	SE_B	β
Step 1	.24					.21				
Constant			5.81	1.01				6.60	1.14	
Organization			-.90	.31	-.48**			-.43	.32	-.22
Team size			-.16	.17	-.17			-.30	.18	-.29
Meeting length			.01	.02	.06			.01	.02	.09
Number of women in the team			-.03	.13	-.04			.17	.13	.23
Age			.03	.05	.09			.05	.05	.16
Organizational tenure			.04	.03	.20			-.01	.03	-.05
Step 2	.33	.084				.32	.10			
Constant			5.79	.97				6.45	1.08	
Organization			-.74	.30	-.39*			-.28	.31	-.14
Team size			-.24	.17	-.25			-.38	.17	-.36*
Meeting length			.01	.02	.05			.01	.02	.10
Number of women in the team			-.04	.12	-.05			.14	.12	.18
Age			.05	.05	.16			.07	.04	.23
Organizational tenure			.04	.03	.19			-.01	.03	-.05
Humor patterns			.17	.08	.33*			.20	.09	.35*

Note. All analyses performed at the team level. ** $p < .01$; * $p < .05$. All analyses controlling for organization (0 or 1), team size in the meeting, meeting length (in minutes), the number of women in the team, team age, and teams' average organizational tenure.

Table 3
Interaction effect on team performance at t1 and t2

Model	Team performance at t1					Team performance at t2				
	R^2	ΔR^2	B	SE_B	β	R^2	ΔR^2	B	SE_B	β
Step 1	.15					.119				
Constant			4.70	.27				5.17	.28	
Team size			-.33	.23	-.35			-.45	.25	-.42
Meeting length			-.07	.22	-.07			.12	.23	.11
Number of women in the team			-.31	.56	-.12			.14	.59	.06
Age			.19	.19	.22			.23	.20	.24
Organizational tenure			.15	.27	.12			.01	.29	.01
Step 2	.28	.12								
Constant			4.76	.27				5.24	.28	
Team size			-.34	.23	-.36			-.45	.26	-.42
Meeting length			-.08	.22	-.08			.13	.23	.12
Number of women in the team			-.29	.56	-.12			.18	.58	.07
Age			.20	.19	.23			.24	.20	.25
Organizational tenure			.18	.27	.15			.03	.28	.03
Humor patterns			.32	.23	.27			.35	.23	.28
Job insecurity			-.23	.19	-.24			-.25	.20	-.24
Step 3	.41	.13								
Constant			4.72	.25				5.19	.25	
Team size			-.34	.21	-.36			-.48	.23	-.45
Meeting length			-.10	.21	-.10			.09	.20	.09
Number of women in the team			-.20	.52	-.08			.23	.53	.09
Age			.05	.19	.05			.06	.20	.06
Organizational tenure			.35	.26	.27			.23	.27	.18
Humor patterns			.11	.23	.09			.12	.23	.10
Job insecurity			-.39	.20	-.39			-.40	.20	-.39
Interaction job insecurity x humor patterns			-.50	.24	-.45*			-.55	.25	-.47*

Note. All analyses performed at the team level. Following Dawson (2014), all control variables and predictors were z-standardized for analyzing the interaction effect. * $p < .05$.

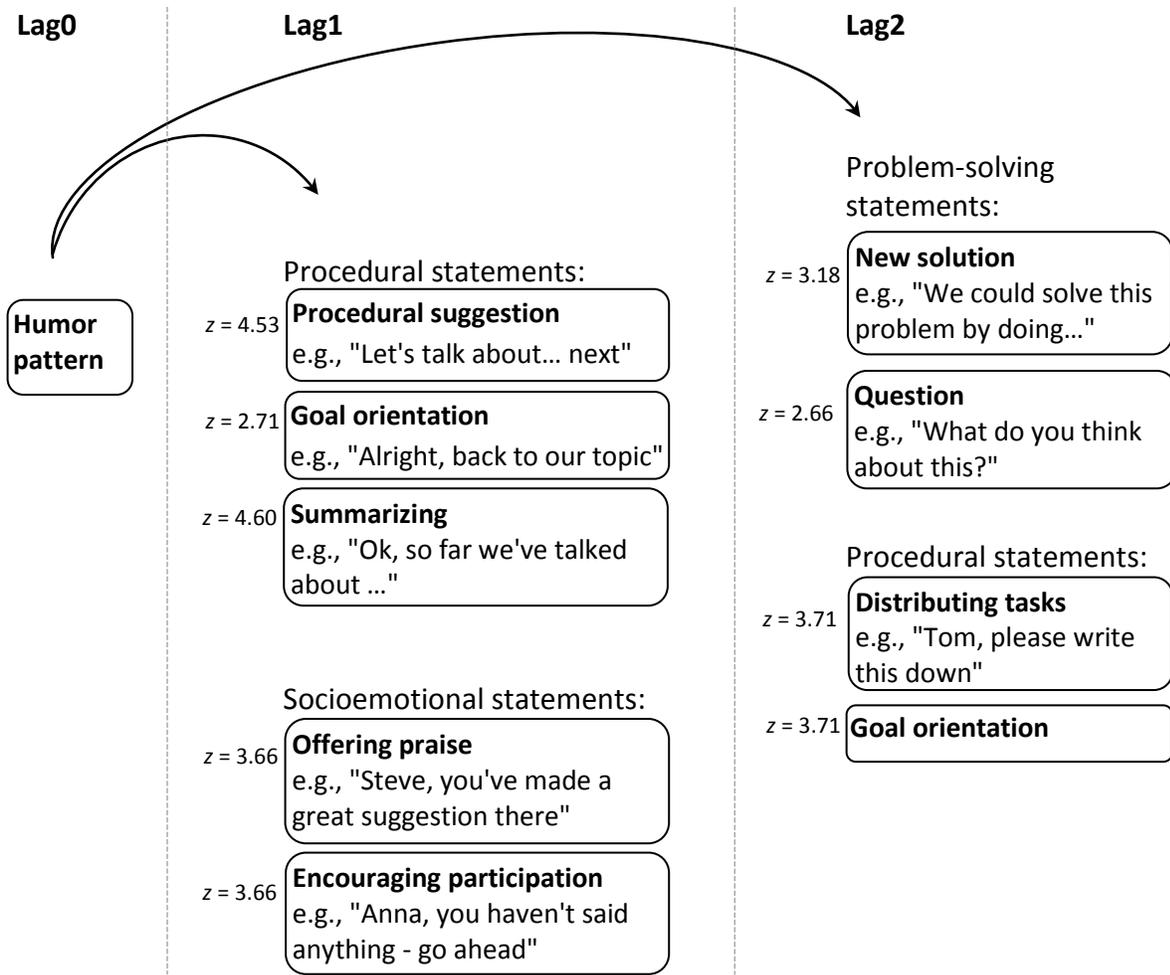


Figure 1. Communication processes triggered by humor patterns within the observed team meetings. Prior to this analysis, humor patterns were recoded and combined to form one single behavioral unit, respectively. Significant sequential effects for Lag1 (immediate next statement) and Lag2 (one but next statement) are indicated by z-values larger than 1.96.

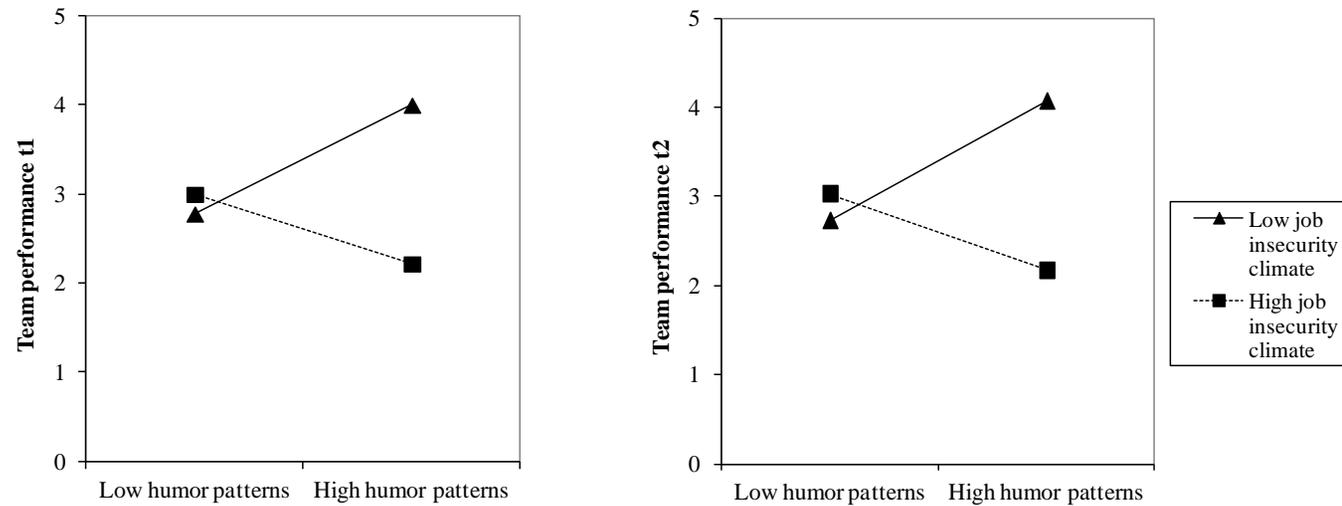


Figure 2. Graphed moderating effect of perceived job insecurity climate at t1 (left) and t2 (right); intercept/constant=3. All predictor variables (control variables, humor patterns, job insecurity climate, and the interaction term) were z-standardized prior to analyses.