

Conversing in Reflective Glory: A Systematic Study Using National Football League Games

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Abstract

Conversations about a group can alter its structure and development. The antecedents of group-oriented conversation are difficult to pinpoint, however, because of the complex interdependence between individual and group behavior. In this study we utilize a unique set of exogenous, group-level treatments – the outcomes of National Football League games – to observe how group members – fans of these teams – participate in group-oriented conversation on Twitter. We show first that positive group outcomes (team victories) encourage group members to talk publicly about their group. Our results also indicate that group members participate more actively in the group-oriented discussion when the the outcome is a surprise. Future directions for this line of research are discussed.

Introduction

Understanding the relationship between group-oriented outcomes and group-oriented communication is important for understanding the evolution of social groups. Groups survive and grow through their ability to attract members who identify with them (Tajfel and Turner 1979). Group outcomes influence these identity choices. When a group is successful, group members “Bask In Reflective Glory” (BIRG) by making their affiliation with the group more salient to others. When it fails they tend to “Cut Off Reflective Failure” (CORF), disassociating themselves from the group or disguising their affiliation (Cialdini et al. 1976).

Yet these choices are not made in a social vacuum (Friedkin 2004). Conversations among group members can shift their understandings of group-related events. For example, after a group failure members may preserve the group’s attractiveness through a discussion that identifies outside forces as the cause (Tajfel and Turner 1979; Weick 1979). Understanding the ways that these outcomes stimulate or suppress communication is thus important to modeling group evolution.

The dynamics of conversations among group members in response to group outcomes is not yet well understood. This is partly because of the difficulty of observing discussion within large, real-world groups. In this paper we use social

media’s unique ability to capture a large number of individual responses to real-world events to study the relationship between group success and group members’ propensity to participate in group-oriented conversations. We use data from 102 games played in the United States’ National Football League (NFL) (events) involving 32 teams (groups) and 573192 unique users as “natural experiments” in group success. We then compare the rate at which Twitter users who identify as fans of a team participated in group-oriented conversations after a game by sending tweets to team hashtags at the game’s completion.

Contributions

Our paper makes both theoretical and methodological contributions. First, we find evidence for two effects documented in conventional social settings – BIRGing/CORFing and sensemaking – within the social media domain. Moreover, we show that these effects, previously measured primarily at the individual level, promote group-based conversations. These findings show the possibility to apply theories of group processes to group-based collective behaviors recorded by large scale observational data.

We also demonstrate the methodological utility of professional sports contests as natural experiments on group processes. Sports contests permit us to observe individuals’ responses to real, rather than artificial group-based stimuli. Moreover, because fans are not directly involved in game outcomes concerns about endogeneity between group outcomes and group member’s behaviors are limited, simulating randomized controlled trials.

Background

BIRGing, CORFing and Sensemaking

Previous research on individual responses to group outcomes has focused on individual cognition and behavior, such as how fans feel about their team or themselves or describe their relationship to the team. Studying the impact of group identity in participation in a group-oriented conversation – talking about the group – is particularly important, however, as it bridges the gap from individual responses to group evolution and sustainability (Friedkin 2004; Fu et al. 2012).

Studies of BIRGing and CORFing have documented the effects of game outcomes on individual attitudes towards and relationships with the groups with which they identify (Cialdini et al. 1976). For example, after a team wins a game fans of the team are more likely to highlight their affiliation with the group, referring to the team with the first person plural pronoun “we” (Wann and Branscombe 1990). When the team fails, they refer to the team as “they,” de-emphasizing their affiliation with the loser.

These responses to group success can be explained by a variety of related mechanisms. Individuals may prefer to participate in more successful groups and thus shift their allegiances according to group outcomes (Hechter 1987). Alternatively, people may choose to emphasize their relationship to successful groups to enhance their reputation in their own mind or the eyes of others (Tajfel and Turner 1979).

Studies of organizational “sensemaking,” the ways in which groups communicate to form a shared interpretation of events, suggest that group members will interact differently in response to unexpected group outcomes (Weick 1979). Specifically, unexpected outcomes generally spur more conversation because expected outcomes are accepted as routine and not in need of interpretation.

Related Work

Sports events are scheduled, repeated and structure-rich, and hence have been used as testbeds for various event summary techniques (Chakrabarti and Punera 2011; Esmin et al. 2014). There has been work aiming to generate a journalistic summary by monitoring people who tweeted about the events while watching the sports game (Nichols, Mahmud, and Drews 2012; Zhao et al. 2011; Tang and Boring 2012).

The bulk of research attention to conversations about athletes and teams on social media has focused on the activity of the athletes, for example (Hambrick et al. 2010; Frederick et al. 2012), or the teams and their marketing departments (Clavio 2011). However, Krvel (2012) finds that social identity is an important element in conversations about Norway’s Rosenberg football team, particularly as it relates to their acceptance of foreign-born players.

Research Questions

Previous research suggests that group outcomes may have competing influences on participation in conversations about the group. BIRGing and CORFing studies suggest that group success will encourage group participation and group failure will discourage participation. Yet while these studies have focused on a variety of individual cognitive, behavioral, and physiological responses, this research has not explicitly examined their influence on participation in conversations about the group. On the other hand, organizational theorists have observed that group failures spur more conversation than successes, partly because failure in organizations is unexpected (Weick 1979). However, these observations have not been tested using a large number of comparable groups. We thus ask:

RQ1. After an event, does the success of the group influence the extent to which group members publicly participate

in conversation about the group?

The decision to join a group conversation can also be affected by the extent to which a group outcome is routine or unexpected. Collective sensemaking – conversation designed to achieve a shared interpretation of a situation – is stimulated by unexpected events (Weick 1979). Some groups’ members may expect them to succeed while others do not (Bandura 2000). Accordingly, whether positive or negative, unexpected results may require more conversation to comprehend.

RQ2. After an event, does the expectedness (expected or surprising) of a group outcome influence the extent to which group members publicly participate in conversation about the group?

Method

Data

We collected tweets related to games played by the 32 teams in the NFL during 8 weeks of the 2013–2014 season (weeks 1, 4, 5, 6, 7, 8, 10, 11). Data were not available for weeks 2, 3 and 9 due to errors in collection.

First, we identified a list of hashtags and Twitter accounts for all 32 teams¹ (e.g., “#Bills” and “@BuffaloBills” for the team “Buffalo Bills”).

Next, we collected tweets that mentioned any of the team accounts or team hashtags within ± 1 hour of each game using Twitter’s Streaming API². In total, 3793873 tweets posted by 1227932 users for 102 games were collected.

Then, a user was categorized as an identifier with a particular team if that user (a) sent at least one tweet to the team hashtag within one of the games, (b) followed that team’s official twitter account, and (c) did not follow the official twitter account of any other team. Among all collected users, 573192 users were identifiers (46.80%) who posted 2003119 tweets (52.80% of all tweets).

Finally, we collected game and team-game attributes from pro-football-reference.com/boxscores. These attributes were used as covariates of tweeting behaviors.

Variables

Game Attributes. *Game windows.* Tweets sent during a game were classified as “in-game” tweets, and tweets sent within 1 hour after the end of a game were classified as “post-game” tweets. *Prime time game.* Some games are played during prime time television hours (after 6pm). A game played at prime time may draw larger audiences, and so we expected that Twitter “attendance” would also be influenced.

Team-Game Attributes. *Home team.* A dummy variable indicates whether the team was at home or on the road for that game. *Favored team.* A dummy variable indicates whether a team was predicted to win or lose based on the point spread determined by the gambling market. *Winner.* A dummy variable indicates whether the team eventually won or lost the game.

¹<http://www.vegau.com/resources/NFL-twitter-hashtags/>

²<https://dev.twitter.com/docs/streaming-apis>

Results

RQ1: Winning and Losing

We fitted a separate mixed-effect model for each of the 32 teams predicting whether an identifier tweeted within an hour after a game. Random effects were specified to model the interdependence among repeated actions of a identifier (R1), and all identifiers' actions within a game (R2). Two team-level variables and one individual-level variable were controlled: whether a team played at prime time (C1) and/or was at home (C2), and whether an identifier tweeted during a game (C3). These variables might influence whether a user payed attention to a game prior to learning the result.

The results of the 32 models indicate a robust effect of group success/failure (i.e., win/loss) across teams. As shown in Figure 1, for 26 out of 32 teams, identifiers of the team were more likely to tweet to the team's handle after their team was victorious, compared with when their team lost. In short, the individual level models provide clear, systematic evidence of the effect of group success on group-oriented conversation in social media.

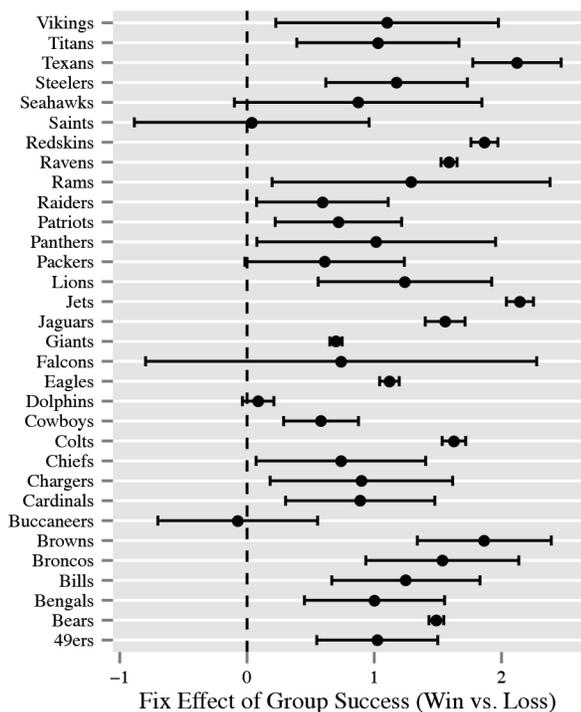


Figure 1: The effect with 95%CI of group success selected from 32 separate models predicting the probability of an identifier's tweeting behavior (to the team's handle) within a hour after a game.

To corroborate this finding, we fitted a mixed-effect model for all of the 32 teams predicting the proportion of a team's identifiers who hashtagged the team within an hour after a game. This model includes a new random effect for the interdependence among identifiers of a given team (R3), in ad-

dition to the two random effects (R1 and R2) included in the 32 separate models. The first and second controlled variable aforementioned were included, along with the proportion of the team's identifiers who hashtagged the team during the game. This proportion is a counterpart of C3 in the separate models but was measured at the team level. As shown in Table 1 (Model 1), group success significantly predicted the increase of proportion of tweeted identifiers after a game. This finding is consistent with the individual-level models.

	Model 1 (RQ1)		Model 2 (RQ2)	
	Coef.	95%CI	Coef.	95%CI
Fixed effects				
Intercept	-3.99	[-4.20, -3.78]	-	-
Prime time [C1]	-0.06	[-0.27, 0.16]	-0.03	[-0.24, 0.17]
Home team [C2]	0.04	[-0.06, 0.14]	0.04	[-0.06, 0.14]
In-game prop [C3]	5.01	[3.91, 6.28]	5.04	[3.86, 6.22]
Winner	0.88	[0.77, 0.98]	-	-
Winner×Favored				
Unfavored, lost	-	-	-4.07	[-4.29, -3.85]
Favored, lost	-	-	-3.83	[-4.07, -3.59]
Unfavored, won	-	-	-2.94	[-3.21, -2.68]
Favored, won	-	-	-3.21	[-3.45, -2.97]
Random effects				
V(identifiers) [R1]	0.13	[0.31, 0.41]	0.13	[0.31, 0.41]
V(games) [R2]	0.13	[0.28, 0.44]	0.12	[0.26, 0.42]
V(teams) [R3]	0.01	[0.00, 0.21]	0.01	[0.00, 0.22]

Table 1: Summaries of group-level models predicting the proportion of tweeted fans of a team within an hour after a game. $V(\cdot)$ denotes variance. "In-game prop." is the proportion of tweeted fans of each team during a game.

RQ2: Expected vs. Unexpected Results

We did not fit separate models for teams as the variation of outcome unexpectedness was often small within a team. Instead, we fitted a model for all teams predicting the proportion of identifiers hashtagging their team after a game (see Model 2 in Table 1). The same controlled variables and random effects in Model 1 were included. Unexpectedness was modeled as an interaction between winner and favored team (i.e., unfavored and lost, unfavored but won, unfavored but won, and favored and won). The effect of unexpectedness (i.e., unfavored but won & favored but lost vs. favored and won & unfavored and lost) is significant ($\ln(OR) = 0.25$, $SE = 0.09$, $p < .01$) per a planned contrast.

Further tests of planned contrasts indicate a hierarchy of the proportion of identifiers tweeting across different levels of unexpected result. First, the proportion was larger when a team won unexpectedly as compared with when the team won a game in which it was favored ($\ln(OR) = 0.26$, $SE = 0.10$, $p < .05$). Second, this proportion was larger when a team won expectedly than when the team lost unexpectedly ($\ln(OR) = 0.62$, $SE = 0.10$, $p < .001$). Finally, this proportion was larger when a team lost unexpectedly compared to when it was expected to lose ($\ln(OR) = 0.24$, $SE = 0.10$, $p < .05$). This hierarchy suggests two independent effects on participation. First, as reported above, identifiers prefer to tweet to team hashtags/handles after wins

when compared with losses. Second, identifiers prefer to tweet to team hashtags/handles after unexpected outcomes when compared with expected ones.

Discussion

Review of Findings

Our results indicate a substantial and robust effect of group success on participation in group-oriented conversation. After a team is victorious individuals who identify with the team are significantly more likely to tweet to the team handle/hashtag than they are after the team loses.

Our results also indicate that the “surprisingness” of a result has an important impact on participation, moderating the effect of BIRGing and CORFing. The tendency for group members to participate in conversation after success is enhanced when the victory is a surprise. Surprising losses also attract more conversation than losses that are expected.

Future Work

Our study identifies a consistent behavior of identifiers but does not provide precise evidence of its motivation. In addition to BIRGing and CORFing it is possible that group success engenders in identifiers a desire to participate more in conversation in general. A second possibility is that conversations about winners are more attractive to all users, not just identifiers, perhaps because they contain positive feelings and pro-social expressions. In future work we will test for these alternative explanations by comparing the behavior of fans who identify with the team to those who do not.

Our study focused exclusively on whether group members were active in these conversations, but ignored the content of these social interactions. This simplicity permitted the analysis to focus on the robustness of the effect across different groups without introducing complexities, such as local language or culture, that could introduce bias. In future work we will analyze the content of fan responses to better understand the precise mechanisms that motivate their participation in group-oriented conversation.

Conclusion

Successful groups attract and retain members, potentially leading them to become stronger. However, work outside of social media has not been able to document changes in collective interactions, such as group-oriented conversations, among group members. Our results provide evidence that group outcomes do influence these interactions, at least at the basic level that individuals are more likely to participate in group-oriented conversations when their group is successful or surprises them.

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