

Annotation of Adversarial and Collegial Social Actions in Discourse

David B. Bracewell, Marc T. Tomlinson, Mary Brunson, Jesse Plymale,
Jiajun Bracewell, and Daniel Boerger

Language Computer Corporation

Richardson, TX 75080

{david,marc,mary,jesse,jiajun,dan}@languagecomputer.com

Abstract

We posit that determining the social goals and intentions of dialogue participants is crucial for understanding discourse taking place on social media. In particular, we examine the social goals of being collegial and being adversarial. Through our early experimentation, we found that speech and dialogue acts are not able to capture the complexities and nuances of the social intentions of discourse participants. Therefore, we introduce a set of 9 social acts specifically designed to capture intentions related to being collegial and being adversarial. Social acts are pragmatic speech acts that signal a dialogue participant's social intentions. We annotate social acts in discourses communicated in English and Chinese taken from Wikipedia talk pages, public forums, and chat transcripts. Our results show that social acts can be reliably understood by annotators with a good level of inter-rater agreement.

1 Introduction

Discourse over social media presents a unique challenge for discourse processing, which has traditionally been focused on task- (Grosz, 1978; Traum and Hinkelman, 1992) and formal meeting- (Shriberg et al., 2004) based discourse. In contrast, the discourse taking place over social media is focused more on the social engagements between participants. These social engagements are often driven by the social goals of the participants and not by a common goal or task.

Social goals focus on the efforts of individuals to fulfill roles and maintain or alter relationships with

others in a group. There are a great number of social goals a discourse participant may undertake, such as: maintaining the role of an authority or power (Bramsen et al., 2011; Mayfield and Rose, 2011); or trying to gain a new role, such as by pursuing power (Tomlinson et al., 2012);

In this paper, we focus on the social goal of an individual (actor) maintaining a relationship (intention) with a second single individual (target). In particular, we wish to address the intentions of individuals whose goal is related to a *collegial* (+ valence) or *adversarial* (- valence) relationship.

Collegiality is defined as cooperating with others in order to reach a common goal or ideal. Collegiality has importance at a personal, interpersonal, and group level. At the personal level, collegiality can be an indicator of the degree of social support a person has. Social support can be physical or emotional and can have effects on job satisfaction (McCann et al., 1997) and, in some cases, quality of life (Shapiro et al., 2001). Collegiality is key for a productive discourse and collaboration. Studies show that people who are put together in groups are more likely to be collegial (Tajfel and Turner, 1979). Collegial groups are more likely to have increased performance (Little, 1982) and are more likely to reach their goals (Campion et al., 1996).

In contrast to collegiality, adversarial behavior is meant to explicitly point out opposition or dislike for other participants. Adversarial individuals often are not following the cooperative principle of dialogue as formulated in Grice's maxims (Grice, 1975). Moreover, due the anonymity that social media provides adversarial participants often also do

not follow the social norm of taking face into account, such as Boella et al. (2000) suggest. The dialogue only progresses due to the social intentions of the other discourse participants in reaction to the adversarial individual, e.g. defending one's honor.

We adopt the Grosz and Sidner (Grosz and Sidner, 1986) theory of discourse, which breaks discourse into three constituents: (1) linguistic structure; (2) intentional structure; and (3) attentional state. We address linguistic structure by segmenting the discourse based on topical shifts (Cassell et al., 2001), which can be accomplished using methods such as (Blei et al., 2003) or (Ambwani and Davis, 2010). For attentional structure, we borrow from research on local coherence by Barzilay and Lapata (2005). The most crucial of the three constituents for the understanding of social goals is the intentional structure.

As a first attempt at capturing the intentional structure indicative of collegial and adversarial behavior, we looked at using the prevailing methods in discourse processing. Namely, we examined mapping dialogue acts (Allen and Core, 1997; Stolcke et al., 1998), which pertain to the intentions of the discourse, into these higher level social goals. However, we found that dialogue acts are not capable of capturing the nuances of the social intentions of the discourse participants.

Instead of focusing solely on the discourse, the intentional structure of social discourse must also focus on the discourse participants and how their social goals constrain their dialogue. We argue that to capture these social goals it is necessary to understand the social intentions of the discourse participants and how they perceive the social intentions of others. We define a social intention as the intention of an individual to affect their social status or relationships within a group. In doing so, we consider the social cognition of the discourse participants, it is from cognition that the participants' social intentions are transformed into linguistic utterances.

We identify a set of 9 social acts, listed in section 3, that capture common social actions performed by individuals whose social goal is the maintenance or altering of a collegial or adversarial interpersonal relationship. These social acts come from literature in the fields of psychology and organizational behavior and are motivated by work in discourse under-

standing. We present the results of annotating these 9 social acts for discourses communicated in Chinese and English. In total, the corpus is made up of 215 English and 292 Chinese discourses.

2 Related Work

The two areas of research most related to this paper are in social relationship extraction and discourse processing. Work in the area of social relationship extraction can be divided into several areas. The field of socio-linguistics boasts well-established studies of interpersonal relationships. For example, Eggins and Slade present a thorough linguistic analysis on causal conversations that covers topics such as humor, attitude, friendliness, and gossip (Eggins and Slade, 1997). This is accomplished through a comprehensive analysis of the dialogue at multiple levels. In contrast, however, research using Natural Language Processing to automatically identify social relationships in text is still in its infancy.

Strzalkowski et al. (2010), examine identification of social goals by breaking them down into mid-level social language uses. They focus on the use of discourse features (e.g. topic control) to identify language uses (Strzalkowski et al., 2010) that might be indicative of some social constructs.

Another area of research that is along the lines of determining adversarial and collegial actions is the detection of agreement and disagreement. Wang et al. (2011) identify agreement and disagreement in English using conditional random fields. Similarly, Hillard et al. (2003) detect agreement and disagreement in speech transcripts using prosodic features.

The closest work to a general view of social acts is by Bender et al. (2011). The researchers created an annotated corpus of social acts relating to *authority claims* and *alignment moves*. We propose that social acts are instead a broad class of speech acts that cover a wide variety of social interactions. However, this paper focuses on social acts which correlate to a positive and negative valence for interpersonal relationships.

Research understanding the intentionality of dialogue and discourse has a long history. Some of the earliest work in discourse processing is on speech acts. Speech acts are actions performed by individuals when making an utterance. Austin (1962)

formalized the concept of speech acts by separating them into three classes: (1) *locutionary*, (2) *illocutionary*, and (3) *perlocutionary*. Locutionary acts the prosody, phonetics, and semantics of the utterance. Illocutionary acts are the intended functions of the utterances of the speaker. Perlocutionary acts are illocutionary acts that produce a certain effect in its addressee, e.g. scaring and insulting. Much of the work in speech acts has been focused on illocutionary acts due to the work of Searle (1969).

Dialogue acts are illocutionary speech acts extended to include the internal structure, such as grounding and adjacency pairs, of a dialogue. There are a number of schemes for coding dialogue acts, such as DAMSL (Allen and Core, 1997) and VERB-MOBIL (Jekat et al., 1995). The DAMSL coding scheme defines dialogue acts that are forward looking, which are extensions of speech acts, and which are backward looking, which relate the utterance to previous utterances. Likewise, we define social acts to reflect the social intention of an utterance. Social acts serve a function to inform individuals about social relationships. For example, in the statement “get me a cup of coffee“, speech acts would focus on identifying the set of actions that would result from the utterance - presumably the target of the utterance physically going to get a cup of coffee for the speaker. In contrast, social acts focus on the social implicature of the statement, that the speaker is indicating their power over the target.

Other work has focused on the coherence of discourse (Barzilay and Lapata, 2005; Byron and Stent, 1998; Hobbs, 1979; Mann and Thompson, 1988). Mann and Thompson (1988) introduce Rhetorical Structure Theory (RST), which was originally developed during the study of automatic text generation. They posit that the coherence of a text is attributed to the rhetorical relations between non-overlapping texts called the nucleus and satellite. The definition of the relations are not morphological or syntactic, but instead are focused on function and semantics.

Barzilay and Lapata (2005) cast the local coherence problem as a ranking problem. They take a set of alternative renderings for a discourse and rank them based on local coherence. Inspired by Centering Theory they use an entity-based representation where the role that the entities fill is taken into consideration.

3 Social Acts Expressing Adversarial and Collegial Intentions

Social interaction is the foundation of discourse. Even task oriented discourse has many social implications. One of the most common social implications of language is the expression of a desire to establish or maintain a bond between the individuals, i.e. a collegial relationship. Here we also consider its opposite, to sabotage others, i.e. playing the adversary.

Collegiality is defined as cooperating with others in order to reach a common goal or ideal. Interpersonal collegiality is often born out of group collegiality, as the group defines the common bonds, shared focus and common purpose that serve to unite the individuals (see Gomez et al, 2011). An individual maintains their collegial relationship with the other members through collegial expressions, such as supportive behavior and solidarity.

In contrast, adversarial behavior is meant to explicitly point out opposition or dislike for other participants. An individual establishes his/her opposition to a group or an individual through such means as disrespect and undermining the other’s efforts.

We label the discourse segment purpose, or the social intentions of an utterance, as social acts. Social acts are pragmatic speech acts that signal a dialogue participant’s social intentions. Social intentions can range from establishing mutual bonds to asserting dominance over another individual. These social acts can be signaled with a variety of cue phrases as well as through a discourse participants observation or violation of social norms, or expectations of socially appropriate responses.

For informing a participant’s intentions to be adversarial or collegial toward others, we define a set of 9 social acts, listed in figure 1. The set of acts presented below have been derived from work in psychology on conflict and cooperation (Brewer and Gardner, 1996; Deutsch, 2011; Jehn and Mannix, 2001; Owens and Sutton, 2001).

3.1 Agreement & Disagreement

Agreement can act as an affordance to an individual or as a means to establish solidarity between individuals. Likewise disagreement can act as a way of undermining or challenging credibility. However,

Agreement	Statements that a group member makes to indicate that he/she shares the same view about something another member has said or done.
Challenge Credibility	Attempts to discredit or raise doubt about another group members qualifications or abilities.
Disagreement	Statements a group member makes to indicate that he/she does not share the same view about something another member has said or done.
Disrespect	Inappropriate statements that a group member makes to insult another member of the group.
Offer Gratitude	A sincere expression of thanks that one group member makes to another.
Relationship Conflict	Personal, heated disagreement between individuals.
Solidarity	Statements that a group member makes to strengthen the groups sense of community and unity.
Supportive Behavior	Statements of personal support that one group member makes toward another.
Undermining	Hostile expressions that a group member makes to damage the reputation of another group member.

Figure 1: The set of 9 social acts that capture social moves by individuals exhibiting adversarial behavior.

because of the special status of agreement and disagreement we consider them as two separate social acts.

Agreement can be manifested through simple phrases, such as “I agree”, through negations of disagreement, such as “I am not disagreeing with you”, and through more complex phrases, such as “What Adam says is in principle correct.” Similarly, disagreement is manifested through simple “I disagree” phrases as well as negations of agreement, such as “I definitely do not agree with what you said.”

An example of agreement in Chinese is 同意 A所言, 所以還是先繼續保護著吧。 (“I agree with what A said, so just keep the protection.”). An example of disagreement in Chinese is 恕本人不認同。 (“sorry, I can not agree.”).

3.2 Challenge Credibility

Challenging credibility can be used by an individual to lower the status of other group members (Owens and Sutton, 2001). These challenges can be in demands to prove credibility, such as “prove your lies” and aggressive accusing questions, such as “what does that have to do with what we are talking about?”. Challenging credibility can also occur through gossip, such as “X doesn’t know what he is talking about”. This tactic can be used by group members to moderate the power of a leader who has overstepped their boundaries (Keltner et al., 2008).

An example of Challenge Credibility in Chinese is 不知可有其他依據? (“I do not know if you have other evidence?”).

3.3 Disrespect

Disrespected individuals often feel they have been unjustly treated due to the disrespectful action, causing a social imbalance between them and the perpetrator (Miller, 2001). This social imbalance causes a power differential between the two individuals, thus giving the perpetrator power over the individual. Examples of disrespect include “You are a gigantic hypocrite you know that?” and “Do you speak English well?”

An example of Disrespect in Chinese is 你有种的话, 请表明你的教派身份。 (“if you have the guts, show your religious status.”).

3.4 Offer Gratitude

There is psychological validation for the consideration of attitudes expressed by one individual towards another. Even in the absence of any major differences within a group, the expression of an in-group bias and out-group bias (Brewer, 1979) between individuals still takes place. Individuals within a group are more likely to possess positive feelings for another individual within the group and to rate him or her more highly than an individual outside of the group.

An example of Offer Gratitude in Chinese is 回應: 谢谢你的意见。 (“response: thanks for your opinion”).

3.5 Relationship Conflict

Relationship conflict is a personal, heated disagreement between individuals (Jehn and Mannix, 2001). Individuals exhibiting relationship conflict are being adversarial. Examples of relationship conflict include “your arrogant blathering” and “I consider

it offensive for you to assert that I insist on turning every interaction into a personality conflict.”

An example of Relationship Conflict in Chinese is 久遠認為也有可能是閣下眼睛有問題，沒看見來源。（“I think it is possible that you did not see the sources because your eyes have a problem.”）.

3.6 Solidarity

Further, language indicative of a desire for group solidarity encapsulates the establishment and maintenance of shared group membership. Group membership can be expressed at either the relational level (e.g. Father, co-worker, etc.) or the collective level (e.g. single mothers) (Brewer and Gardner, 1996). Language indicative of a desire for group solidarity demonstrates that an individual identifies with the group, an important characteristic of leaders (Keltner et al., 2008) and cooperators (Deutsch, 2011). This solidarity can be expressed explicitly (e.g. “We’re all in this together”), covertly (e.g. as through the use of inclusive first-person pronouns), or through unconscious actions and linguistic cues, such as the use of in-group jargon, certain syntactic constructions, and mimicry.

An example of Solidarity in Chinese is 生日快乐！（“Happy birthday!”）.

3.7 Supportive Behavior

By definition, supportive behavior, or cooperation towards a common goal, is an example of collegiality. This type of behavior lies at the center of group dynamics. Cooperation is correlated with both overall group performance and managerial ratings of group effectiveness (Campion et al., 1996). Evidence for cooperation manifests itself in many different ways. Classically, there is the notion of cooperation on a physical task (e.g. one person helping another lift a heavy weight), or cooperation through social support (e.g. Mary says, “John’s decision is excellent”).

There are also more subtle, unconscious examples of cooperation between individuals, which can demonstrate a certain degree of collegiality between the individuals. One example is cooperation for the effective use of language and the building of dialogue (Garrod and Pickering, 2004). Dialogue is a complicated interaction that requires commitment from both parties. In order to maintain a stable

conversation, participants must be willing to expend cognitive effort to listen, understand, and form a relevant response that advances the dialogue. The degree to which participants are able to maintain a cohesive dialogue should be reflected in the collegiality of the participants. If one participant is not cooperating, the dialogue will not progress.

An example of Supportive Behavior in Chinese is 加油啊。（“do your best.”）.

3.8 Undermining

By definition undermining is meant to damage or weaken. Undermining a goal is meant to erode the support or weaken the stance of the goal. Individuals who are undermining another are demonstrating a form of hostility, which is in direct opposition to being supportive. Examples of undermining include “And people you quoted aren’t historians,” “This is making a mountain out of a molehill,” and “So you will delete anything that YOU don’t like?”

An example of Undermining in Chinese is 就像某人说这条目是他建的不让其他任何人修改一样荒谬。（“it is ridiculous that certain people said that he built the item and he will not let other people edit it.”）.

4 Data Collection & Annotation

Annotations were performed on social discourses extracted from Wikipedia talk pages, public forums, and chat transcripts. A collection of 215 discourses communicated in English and 292 discourses communicated in Chinese were annotated. Each discourse was annotated by 2 native-language annotators.

Annotation was performed at the sentence level with each sentence acting as an utterance. The sentences were presented in the order that they appeared in the social discourse and included speaker information. Annotators were given the option to label each sentence with zero or more social acts. An example of a discourse communicated in English annotated with social acts is shown in Figure 2 and an example in Chinese is shown in Figure 3.

Annotators were given the list of social acts with their associated definitions, as shown in figure 1. Annotation began on a small set of data with each annotator labeling sentences based on their own intuition. After this small set of data was annotated (10

Turn 1] Propose that this page be moved to East Timor Defence Force as this is the closest translation of Foras de Defesa de Timor Leste. I have worked in Timor Leste as a government advisor, including with FDTL, and have never heard anybody ever refer to the FDTL as Military of East Timor. P1

Turn 2] As I understand it, 'East Timor Defence Force' is considered outdated. **While it was commonly used when the force was established, almost all english-language publications now use 'F-FDTL'. 'Military of East Timor' is a generic name, and I agree that it's rarely used and not a great title.**[Agreement] I'd prefer 'Timor Leste Defence Force' as this seems to be the direct translation, but this would be inconsistent with the other Wikipedia articles on the country. **Should we be bold and move this article to 'Timor Leste Defence Force'?**[Solidarity] P2

Turn 3] I so totally agree with you. [Agreement] 'Timor Leste Defence Force' is it. [Agreement] **The only reason I did not propose that was the failure to change the country page from East Timor to Timor Leste, a decision that I feel was extremely discourteous of Wikipedia considering the government's specific request that it be referred to as Timor Leste.**[Solidarity] If you have worked there you will know that everybody uses 'Timor Leste', even the ADF but the Australian DFAT uses East Timor although the more enlightened Kiwi embassy call it TL. I suggest we leave it for 48 hours to see if anyone has any strong feelings and then change it to 'Timor Leste Defence Force' with diverts from F-FDTL and FDTL P1

Turn 4] I agree with that approach. [Agreement] In the interests of consensus editing, I've posted a note at Talk:East Timor (in lieu of a Wikiproject on the country) to seek other editors' views. P2

...

Turn 8] **As no-one has raised any objections, I've just made the move.**[Supportive Behavior] P2

Turn 9] **Good move, well done**[Supportive Behavior] P1

Figure 2: An example discourse communicated in English with social acts labeled.

discourses) each group of annotators, i.e. one group of 2 Chinese annotators and one group of 2 English annotators, worked together to formulate guidelines for what constitutes an instance of each social act in their respective language. After the creation of the guidelines the annotators went back to working independently.

The English portion of the corpus consisted of 21,067 sentences of which 4,486 (21.3%) were annotated with one or more of the nine social acts. The Chinese portion of the corpus ended up with 24,339 sentences for which 4,260 (17.5%) had one ore more of the nine social acts annotated.

The set of nine social acts can be naturally split into those that are adversarial and those that are collegial. Thus, we first examined how well the an-

S) 1. 使用 的博客经过了实名认证，特别是名人博客。
[Establish Credibility]
“1. The blogs we used, especially famous people's blogs implemented real-name authentication.
[Establish Credibility]”
2. 百科内的某些观点正是缘于博客，却禁止对该博客的引用。不加入Blog地址的话会使得来源更难于验证。
[Establish Credibility]
“2. Some comments in wiki came from blogs, but it was forbidden to cite the blogs. It is more difficult to confirm the sources without adding the blog address.
[Establish Credibility]”
3. 这些内容根本不需要大众媒体验证即可确信是代表某个知名人士的言论，反之也不会有媒体整天围着博客转来报道这些博文。
[Establish Credibility]
“3. It can be known that these contents represent certain famous person's comment without the authentication of mass media. On the contrary there is no media monitoring these blogs all day long and reporting these posts.
[Establish Credibility]”
T) 基本上认为博客不是第二手来源。
[Disagreement]
如果真要加入博客中的论点，最好找别的媒体报道这篇博客中的看法的文章作为来源。
[Managerial Influence]
“Normally it is considered that blogs are not second hand sources.
[Disagreement] If you really want to use the comments in the blog, it is the best to use the articles written by other media that reported the comments in these blogs.
[Managerial Influence]”

Figure 3: An example discourse communicated in Chinese with social acts labeled.

notators were able to distinguish between sentences containing adversarial and collegial social acts. We defined the set of adversarial social acts as: Challenge Credibility, Disagreement, Disrespect, Relationship Conflict, and Undermining. The set of collegial social acts were defined as: Agreement, Offer Gratitude, Solidarity, and Supportive Behavior. Table 2 shows the mutual F-Measure for adversarial and collegial social acts. In addition, we examined the annotators ability to agree when a sentence had no adversarial or collegial social act present.

Tables 2 and 3 show the mutual F-Measure for agreement on adversarial, collegial, and neither (no social act present) for English and Chinese respectively. The English annotators had high agreement (close to 90%) for determining if a sentence had a collegial social act (89.7%) or neither collegial or adversarial social act (89.4%). Their agreement for

	English			Chinese		
	# Annotated	Kappa	F-Measure	# Annotated	Kappa	F-Measure
Agreement (+)	295	0.38	76.5%	315	0.50	54.5%
Challenge Credibility (-)	1,113	0.36	33.8%	409	0.38	45.4%
Disagreement (-)	434	0.46	71.0%	555	0.07	13.1%
Disrespect (-)	367	0.24	53.5%	214	0.36	41.5%
Offer Gratitude (+)	108	0.44	79.9%	300	0.88	89.9%
Relationship Conflict (-)	399	0.13	21.3%	93	0.42	56.8%
Solidarity (+)	100	0.52	41.2%	574	0.41	44.0%
Supportive Behavior (+)	269	0.36	68.1%	1,034	0.84	88.2%
Undermining (-)	1,401	0.35	49.3%	766	0.49	58.0%

Table 1: The number of annotations, kappa, and F-Measure per social act. The valence of the social act is denoted in parentheses next to the social act name, e.g. (+) for positive valence and (-) for negative valence.

	F-Measure	No. of Sentences
Adversarial	79.9%	3,714
Collegial	89.7%	772
Neither	89.4%	16,581
Average	87.8%	-

Table 2: The mutual F-Measure for adversarial and collegial social acts in discourse communicated in English.

	F-Measure	No. of Sentences
Adversarial	73.0%	2,037
Collegial	85.5	2,222
Neither	79.9%	20,079
Average	80.3%	-

Table 3: The mutual F-Measure for adversarial and collegial social acts in discourses communicated in Chinese.

adversarial social acts was almost 80%, which is still quite high. The Chinese annotators had their highest agreement for collegial social acts (85.5%) followed by sentences with neither collegial or adversarial social acts (79.9%). The agreement for adversarial social acts was 73.0%, which is still acceptable. In general, we hypothesize that natural discourse is predominately collegial and because of this annotators have an easier time identifying and agreeing upon collegial social acts.

After determining that annotators can agree on whether a sentence contained an adversarial or collegial social act, we examined their ability to identify individual social acts. Table 1 shows the number of sentences annotated for each social act as well as the kappa (Cohen, 1960) and mutual F-Measure.

The kappa values range from 0.13 to 0.53 for English and 0.07 to 0.90 for Chinese. Relationship conflict was the most difficult to reach consensus on for English and Disagreement was the most difficult for Chinese. While the kappa values seem low, they are comparable with other work in social acts and work done in dialogue acts.

Kappa values for dialogue acts have been reported as high as 0.76 for ANSWER and as low as 0.15 for COMMITTING-SPEAKER-FUTURE-ACTION (Allen and Core, 1997). Other work in social acts have seen kappa values in a similar range, such as Bender et al. (2011) who report kappa values from 0.13 to 0.63. Given the complexities presented by annotating the social intentions of dialogue participants, we believe that the kappa values reported here are acceptable.

5 Conclusion

In this work we have addressed the creation of a multilingual corpus of utterances annotated with social actions relating to being adversarial and being collegial. In doing so, we introduced a set of 9 social acts designed to capture the social intentions of discourse participants. Our results show that annotators can reliably agree and distinguish adversarial and collegial social actions. Moreover, we also believe that the agreement rates obtained for most of the individual social acts are adequate given the complexity of the task.

Acknowledgement

This research was funded by the Office of the Director of National Intelligence (ODNI), Intelligence Advanced Research Projects Activity (IARPA), and through the U.S. Army Research Lab. All statements of fact, opinion or conclusions contained herein are those of the authors and should not be construed as representing the official views or policies of IARPA, the ODNI or the U.S. Government.

References

- J Allen and M Core. 1997. Draft of DAMSL: Dialog Act Markup in Several Layers.
- Geetu Ambwani and Anthony R. Davis. 2010. Contextually-mediated semantic similarity graphs for topic segmentation. In *Proceedings of the 2010 Workshop on Graph-based Methods for Natural Language Processing*, TextGraphs-5, pages 60–68, Stroudsburg, PA, USA. Association for Computational Linguistics.
- J L Austin. 1962. *How to do things with words*, volume 7 of *The William James lectures*. Harvard University Press.
- Regina Barzilay and Mirella Lapata. 2005. Modeling local coherence: an entity-based approach. In *Proceedings of the 43rd Annual Meeting on Association for Computational Linguistics*, ACL '05, pages 141–148, Stroudsburg, PA, USA. Association for Computational Linguistics.
- Emily M. Bender, Jonathan T. Morgan, Meghan Oxley, Mark Zachry, Brian Hutchinson, Alex Marin, Bin Zhang, and Mari Ostendorf. 2011. Annotating social acts: authority claims and alignment moves in wikipedia talk pages. In *Proceedings of the Workshop on Languages in Social Media*, LSM '11, pages 48–57, Stroudsburg, PA, USA. Association for Computational Linguistics.
- David M. Blei, Andrew Ng, and Michael Jordan. 2003. Latent dirichlet allocation. *JMLR*, 3:993–1022.
- Guido Boella, Rossana Damiano, and Leonardo Lesmo. 2000. Social goals in conversational cooperation. In *Proceedings of the 1st SIGdial workshop on Discourse and dialogue - Volume 10*, SIGDIAL '00, pages 84–93, Stroudsburg, PA, USA. Association for Computational Linguistics.
- Philip Bramsen, Martha Escobar-Molano, Ami Patel, and Rafael Alonso. 2011. Extracting social power relationships from natural language. In *Proceedings of the 49th Annual Meeting of the Association for Computational Linguistics: Human Language Technologies - Volume 1*, HLT '11, pages 773–782, Stroudsburg, PA, USA. Association for Computational Linguistics.
- Marilynn B. Brewer and Wendi Gardner. 1996. Who is this "We"? Levels of collective identity and self representations. *Journal of Personality and Social Psychology*, 71(1):83–93.
- Marilynn B. Brewer. 1979. In-group bias in the minimal intergroup situation: A cognitive-motivational analysis. *Psychological Bulletin*, 86(2):307–324.
- D. Byron and A. Stent. 1998. A preliminary model of centering in dialog. In *Proceedings of the 36th Annual Meeting of the Association for Computational Linguistics and 17th International Conference on Computational Linguistics - Volume 2*, ACL '98, pages 1475–1477, Stroudsburg, PA, USA. Association for Computational Linguistics.
- M.A. Campion, E.M. Papper, and G.J. Medsker. 1996. Relations between work team characteristics and effectiveness: A replication and extension. *Personnel psychology*, 49(2):429–452.
- Justine Cassell, Yukiko I. Nakano, Timothy W. Bickmore, Candace L. Sidner, and Charles Rich. 2001. Non-verbal cues for discourse structure. In *Proceedings of the 39th Annual Meeting on Association for Computational Linguistics*, ACL '01, pages 114–123, Stroudsburg, PA, USA. Association for Computational Linguistics.
- Jacob Cohen. 1960. A Coefficient of Agreement for Nominal Scales. *Educational and Psychological Measurement*, 20(1):37–46, April.
- M. Deutsch. 2011. Cooperation and competition. *Conflict, Interdependence, and Justice*, pages 23–40.
- Suzanne Eggins and Diana Slade. 1997. *Analysing casual conversation*. Cassell.
- Simon Garrod and Martin J. Pickering. 2004. Why is conversation so easy? *Trends in Cognitive Sciences*, 8(1):8–11, January.
- Angel Gómez, Matthew L Brooks, Michael D Buhrmester, Alexandra Vázquez, Jolanda Jetten, and William B Swann. 2011. On the nature of identity fusion: Insights into the construct and a new measure. *Journal of Personality and Social Psychology*, 100(5):918–933.
- H. P. Grice. 1975. Logic and conversation. In Peter Cole and Jerry L. Morgan, editors, *Syntax and semantics*, volume 3. New York: Academic Press.
- Barbara J Grosz and Candice L Sidner. 1986. Attention, Intention, and the Structure of Discourse. *Computational Linguistics*, 12(3):175–204.
- Barbara J. Grosz, 1978. *Understanding Spoken Language*, chapter Discourse Analysis. Elsevier Science.
- Dustin Hillard, Mari Ostendorf, and Elizabeth Shriberg. 2003. Detection of agreement vs. disagreement in meetings: training with unlabeled data. In *Proceedings of the 2003 Conference of the North American*

- Chapter of the Association for Computational Linguistics on Human Language Technology: companion volume of the Proceedings of HLT-NAACL 2003-short papers - Volume 2*, NAACL-Short '03, pages 34–36, Stroudsburg, PA, USA. Association for Computational Linguistics.
- Jerry R. Hobbs. 1979. Coherence and coreference *. *Cognitive Science*, 3(1):90–67.
- Karen A Jehn and Elizabeth A Mannix. 2001. The Dynamic Nature of Conflict: A Longitudinal Study of Intragroup Conflict and Group Performance. *Academy of Management Journal*, 44(2):238.
- Susanne Jekat, Ra Klein, Elisabeth Maier, Ilona Maleck, Marion Mast, Tu Berlin, J. Joachim Quantz, and J. Joachim Quantz. 1995. Dialogue acts in verbmobil. Technical report.
- D. Keltner, G.A. A Van Kleef, Serena Chen, and M.W. W Kraus. 2008. A reciprocal influence model of social power: Emerging principles and lines of inquiry. *Advances in experimental social psychology*, 40:151–192.
- Judith W Little. 1982. Norms of Collegiality and Experimentation: Workplace Conditions of School Success. *American Educational Research Journal*, 19(3):325–340, January.
- William C Mann and Sandra A Thompson. 1988. Rhetorical Structure Theory: Toward a Functional Theory of Text Organization. *Text*, 8(3):243–281.
- Elijah Mayfield and Carolyn Penstein Rose. 2011. Recognizing Authority in Dialogue with an Integer Linear Programming Constrained Model. In *Computational Linguistics*, pages 1018–1026. Association for Computational Linguistics.
- B S McCann, J Russo, and G A Benjamin. 1997. Hostility, social support, and perceptions of work. *Journal of occupational health psychology*, 2(2):175–85, April.
- D.A. Owens and R.I. Sutton. 2001. Status contests in meetings: Negotiating the informal order. *Groups at work: Theory and research*, 14:299–316.
- John R. Searle. 1969. *Speech Acts: An Essay in the Philosophy of Language*. Cambridge University Press.
- S L Shapiro, A M Lopez, G E Schwartz, R Bootzin, A J Figueredo, C J Braden, and S F Kurker. 2001. Quality of life and breast cancer: relationship to psychosocial variables. *Journal of Clinical Psychology*, 57(4):501–519.
- Elizabeth Shriberg, Raj Dhillon, Sonali Bhagat, Jeremy Ang, and Hannah Carvey. 2004. The ICSI Meeting Recorder Dialog Act (MRDA) Corpus. In Michael Strube and Candy Sidner, editors, *Proceedings of the 5th SIGdial Workshop on Discourse and Dialogue*, pages 97–100, Cambridge, Massachusetts, USA, April. Association for Computational Linguistics.
- Andreas Stolcke, Elizabeth Shriberg, Rebecca Bates, Noah Coccaro, Daniel Jurafsky, Rachel Martin, Marie Meteer, Klaus Ries, Paul Taylor, and Carol Van Ess-Dykema. 1998. Dialog Act Modeling for Conversational Speech. In *Applying Machine Learning to Discourse Processing*, pages 98–105. AAAI Press.
- Tomek Strzalkowski, George Aaron Broadwell, Jennifer Stromer-galley, Samira Shaikh, Sarah Taylor, and Nick Webb. 2010. Modeling Socio-Cultural Phenomena in Discourse. In *International Conference on Computational Linguistics (Coling)*, number August, pages 1038–1046.
- Henri Tajfel and J. C. Turner, 1979. *An integrative theory of intergroup conflict*, pages 33–47. Brooks/Cole.
- Marc Tomlinson, David B. Bracewell, Mary Draper, Zewar Almissour, Ying Shi, and Jeremy Bensley. 2012. Pursing power in arabic on-line discussion forums. In *Proceedings of the Eighth Conference on International Language Resources and Evaluation*.
- David R Traum and Elizabeth A Hinkelman. 1992. Conversation acts in task-oriented spoken dialogue. *Computational Intelligence*, 8(3):575–599.
- Wen Wang, Sibel Yaman, Kristin Precoda, Colleen Richey, and Geoffrey Raymond. 2011. Detection of agreement and disagreement in broadcast conversations. In *Proceedings of the 49th Annual Meeting of the Association for Computational Linguistics: Human Language Technologies: short papers - Volume 2*, HLT '11, pages 374–378, Stroudsburg, PA, USA. Association for Computational Linguistics.