

Assessing Group Cohesion in Task-based Online Dialogues: A quantitative study

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Research on group cohesion—defined via a set of features such as group unity, group performance, collective efficacy, and group norms—has primarily focused on participant interviews and surveys where group members report their own assessments of the group (Casey-Campbell & Martens, 2009; Demock & Devine, 1997). Less research is available on sociolinguistic indicators of group cohesion, particularly in online environments. This study reports on a series of quantitative measures which have been designed to capture varying degrees of cohesiveness in task-based online discussions. For the purpose of this research, group cohesion is defined as the general consistency in group objectives or values over time and the persistence in the cooperative nature of the members' interactions. Based on this definition as well as Givon's (1983) Topic Continuity and Speech Acts Theory, two quantitative measures have been developed:

(a) **Measure of Task Focus** is defined as the degree to which the discussion is focused on a shared objective. We assess this via a measure which detects digression from the primary topic. In highly task-focused conversation, the most persistent topics are discussed with minimal gaps, where we define gaps as pronominal references to other topics. This measure estimates the ratio of the combined length of the persistent topic chains to the average number of gaps (off-topic digressions) in these topic chains.

(b) **Sociability Measure** is defined as the degree of socio-emotional involvement between speakers. The sociability of a group is reflected by high densities of communicative links between participants and observance of conversational norms, including greetings, thanks, and apologies. This measure estimates the average of the proportion of communicative links, forward-looking dialogue acts (information-request, confirmation-request, offer-commit) as well as conversation normative expressions used in the dialogue.

Our hypothesis is that groups with higher Task Focus and Sociability scores are more cohesive. Data was drawn from five small groups (5x7 participants) engaged in online task-based chat (5x90 min). All chat was systematically annotated by trained annotators for topic/subsequent mention mark-up, dialogue-act tagging, and communication links. Two of the sessions based on a job task (selecting a job candidate) showed higher cohesion scores (%62, %54) than three groups that were engaged in a quest in Second Life (%27, %18, %16). Results correlate well with the assessments of external reviewers who ranked the dialogues according to their level of cohesiveness ($r=.86$), thus showing that the measures identified are indeed predictive of group cohesion in multiparty task-based online discussions.