

Sociosemantic approach of influence in workgroup: a theory of similarity thresholds

Abstract

This study aims to understand the relationship between networks of interpersonal influence and discourse. We hypothesized a relationship between the influence of a workgroup member, measured by his or her centrality in an influence network, and the semantic similarity of his or her discourse with that of the other group members, measured by the proportion of shared semantic fields. Data consist of 45 video recordings of workgroups meetings (over 10 weeks) and of weekly sociometric questionnaires. Actor centrality and the proportion of semantic fields shared with group members are correlated. This empirical demonstration of the relationships between influence and discourse similarity constitutes an important contribution of this study. Our results also suggest that a person's exclusion from the influence network is linked to semantic dissimilarity. That led to the formulation of a theory of similarity thresholds around which the relationship between similarity and influence reverse.

Keywords: centrality, influence, social network, sociosemantic networks, discourse similarity, thresholds theory

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Interpersonal influence is intrinsic to any human organising process and that stands for small workgroups as well. It is an elusive, complex and multifaceted phenomenon often associated with leadership. For the latter, proposed definitions are numerous (Fairhurst & Sarr, 1996; Fairhurst, 2007; Mongeau & Saint-Charles, 2005, 2011; Northouse, 2010; Yulk, 2006) but, according to Yulk (2006), all the definitions referred, in whole or in part, to the influence of a person in order to guide, structure or facilitate communication or action of a group or organization. In order to distinguish the influence exerted by an individual within a group of peers from the formal leadership of a person in authority, many use the expression emergent leadership to refer to the process by which individuals without formal authority come to exert, through time and throughout interaction, acknowledged (and accepted) influence within their group (Emery, 2012; Emery, Daniloski, & Hamby, 2011; Côté, Lopes, Salovey & Mineurs, 2010; Dinh & Lord, 2012). More specifically, leadership emerges when an individual succeed in influencing the work of a group through communication (Guastello, 2007; Moscovici, 1988). Hence, the study of interpersonal influence and of its emergence is considered part of the field of communication and discussed in most of its textbook (e.g. Ellis & Fisher, 1994; Frey, 2003; Hirokawa, 1996; Keyton, 1999; Schultz, 1996; Pavitt, 1999, 2014).

Communicative theories and models of interpersonal influence

Of way to look at communicative theories and models of interpersonal influence is to regroup them in to large and globally distinct categories: (a) a structural approach in which influence is looked at through the prism of the networks formed by the relationships between individuals (Balkundi & Harrison, 2006; Brown & Miller, 2000; Cummings & Cross, 2003; Kadushin, 2005; Katz, Lazer, Arrow, & Contractor, 2004; Klein, Lim, Saltz, & Mayer, 2004); and (b) a discursive approach where influence is understood in terms of the sharing of cognitions and discourses (Fairhurst, 2007; Hunt, 2004).

The structural approach

The structural approach to interpersonal influence is based on the analysis of the emerging networks of relationships between group members in particular with regards to group performance (Cummings et Cross, 2003; Katz et al., 2004). Most of the studies with this approach use sociometric questionnaires to gather data on influence relationships or data on other types of relationships such as friendship, advice, support, etc. that are then correlated with perceptual measure of influence (Krackhardt & Brass, 1994; Saint-Charles & Mongeau, 2009). A propos of individual influence, centrality in the social network is a key variable. Although, in organisational study, both degree centrality and betweenness are considered, in small groups the latter is irrelevant since the possibility for members to have direct connexions between one another is intrinsic to the workgroup situation (Mongeau & Saint-Charles, 2006, 2011). Degree centrality is said to be related to influence because central people have an easier access to resources (Brass et Labianca, 1999).

Degree centrality is a symmetric measure: if a degree exists from A to B, it also exists from B to A. Of course, one can consider outdegree and indegree separately and along with others (Brass & Labianca, 1999; Emery, 2012; Knoke & Burt, 1983) we postulate that the most influential people cumulated more indegrees in the influence network.

A recurrent critique made to that type of study is the fact that they are based on a metaphor of “ties as conduits” (Borgatti and Foster, 2003) where what circulated within the conduits – notably the discourse – is neglected (Labianca & Brass, 2006).

The discursive approach

The discursive approach considers interpersonal influence as a socially constructed phenomenon, the influential person acting as an intermediary between the various representations of the situation (Barge, 1989, 1996; Barge & Hirokawa, 1989; Thayer, 1988). This approach seeks to understand the emergence of influence through the sharing of cognitions (Balkundi & Kilduff, 2005; Hunt, 2004). Implicit leadership theory (also called cognitive categorization theory), social identity theory as well as transformational leadership theory share this perspective.

Implicit leadership theory

Implicit leadership theory (Phillips & Lord, 1981) postulates that individuals’ beliefs and expectations about leaders’ behaviors are related (Eden et Leviathan, 1975). Implicit models of leadership therefore constitute cognitive frame or categorization systems that individuals use to evaluate leadership candidates (Hartog, Maison, Hanges, Ruiz-Quintanilla, & Dorfman, 1999). Therefore, the influence of a person would be related to the level of fit between his or her personal characteristics and the individual representations of leadership of group members (Foti & Luch, 1992).

Leadership and social identity theory

Social identity theory proposes that leadership perception is linked with members’ prototypicality (Brown, Scott, & Lewis, 2004; Hogg, Abrams, Otten, & Hinkle, 2004; Knippenberg, 2011). In other words those who best embody the values, attitudes and norms of the group have the better chance of emerging as leaders. Since no one can perfectly match the prototype of the “ideal member” theory posits a gradation of prototypicality, where the closest one is of the prototype, the greater his or her influence.

Transformational and neocharismatic theories

Finally, transformational and neocharismatic theories (Jordan, 2005; Meda, 2005) postulate that leadership depends on the ability of the person to frame the situation so as to reach members (Antonakis, Cianciolo, et Sternberg, 2004). The leader expresses his or her opinions so as to inspire members (Fairhurst et Sarr, 1996). Here discourse is seen as the main mean of influence and often considered as an intrinsic characteristic of the individual.

Studies conducted in the context of structural and discursive approaches highlight various aspects of the role played by communication in the influence dynamic in small group setting. The structural approach shows the importance of position within a social network while the discursive approach helps to better understand the impact of the discourse of influential individuals. In the field of communication, discourse has always been considered as an important mean of power and influence, starting with the rethoric tradition (Craig, 1999) and this interest is growing notably in contemporary organisational communication studies (Ashcraft & Mumby, 2004).

Beyond these two approaches, many have argued that the structure of the social network and the content of discourse are not independent of each other (Carley, Lee, & Krackhardt, 2001; Diesner, 2013; Roth, 2007a). As highlighted by Balkundi & Kilduff (2005:942), there are new directions in network theory that emphasize networks as both cognitive structures in the minds of organizational members and opportunity structures that facilitate and constrain action.

Despite this claimed complementarity, the two approaches are still rarely used together (Roth, 2006, 2007). Joint mobilization of these two approaches for the study of the influence in workgroups gives rise to what we call "sociosemantic approach to interpersonal influence." To our knowledge, no study has yet attempted to combine these two approaches to study interpersonal influence.

Otherwise, a relational proximity perspective deals with how proximity and similarity of beliefs and attitudes are tightly connected to interactions and ties between people (Borgatti & Foster, 2003). Relational proximity is understood as the way an individual is exposed to influence in a given social system (Rice, 1993) and it is postulate that the mere presence of a direct or indirect tie allows for information exchange and shared interpretation and influence (Meyer, 1994; Rice 1993). For others, influence and shared discourse is a function of the strength of the tie (Brass & Labianca, 1999; Erickson, 1988).

Sociosemantic approach of interpersonal influence

Adopting a sociosemantic approach means to simultaneously take into account the network of social ties stated by group members and the network created by the semantic similarities of their discourse. The underlying idea is that the semantic similarity between discourses creates ties between people (Carley, 1986; Carley et al, 2001; Diesner, 2013; Roth, 2007a, 2007b) and gives rise to networks that we call, with others, "sociosemantic networks" ¹ (Cowan & Jonard, 2004; Haas, 1992; Monge & Contractor, 2003). Hence, a sociosemantic network is understood as a particular type of social network where ties between individuals are created by the similarity of their discourse (Carley, 1986, 1991; Monge et Contractor, 2003; Newman, 2004; Roth, 2007b).

Hypothesis

¹ Also called 'conceptual collective work' (Chartier, Meunier, Jendoubi, & Danis, 2008), 'knowledge sharing and learning networks' (Haas, 1992) or 'epistemic community' (Roth, 2006).

Starting from the idea that sociosemantic networks are not independent of social networks² and both are linked with interpersonal influence, we pose the general hypothesis that discourse similarity and influence are related.

Five specific hypotheses about the association between similarity of discourse and influence arise from the literature review presented above. The first two explore this relationship at the dyadic level while the following three deal with group level.

H1 – Discourse similarity and the strength of the influence tie between two individuals are positively correlated.

H2 – Discourse similarity is significantly higher for dyads for which there is a reciprocal influence tie.

H3 – Discourse similarity of a group member with that of all other group members is positively correlated to his or her degree centrality in the influence network.

H4 – Discourse similarity of a group member with that of all other group members is more strongly positively correlated to his or her indegree centrality in the influence network than with degree centrality.

H5 – Both degree centrality and indegree centrality show a higher correlation with strong influence ties.

Method

Globally method consists of correlating data from sociometric questionnaires on influence ties within workgroups with networks of discourse similarities created from group member discussions.

Sample

Data for this study were collected from a sample of 34 students (29 women and 5 men) enrolled in an undergraduate communication program in Canada. They were randomly divided into five groups of six to eight people. These groups can be considered zero-history, leaderless groups (Johnson & Bechler, 1998) since students were at the beginning of their undergraduate program, had not met one another before, and there was no formal structure within their groups. These groups have worked together on a task worth 40% of the total course mark and the mark was collective. Hence, the task was real and had important consequences for group members (the course is mandatory in the program). All students were volunteers. For ethical reasons, a procedure was set up so that all students could anonymously refuse to participate. The study received Research Ethics Board approval from the authors' institution.

Data collection

Data on influence ties were collected through a sociometric questionnaire filled each week by group members ($n = 306$, 34 members \times 9 weeks).

² According to Carley (1991), they coevolve.

Data related to discourse similarity come from transcripts of video recordings of 45 3-hour group meetings (9 x 5 groups) spread over ten weeks at the rate of one meeting per week (with the exception of one week when there was no meeting) for a total of 135 hours of recording. Due to financial constraints, the transcripts were limited to 30 minutes per meeting. So that transcripts best reflect the content addressed by members, they were divided into three 10-minute periods: early, mid-term and end of meeting. Thus, a total of 22.5 hours of recording were transcribed.

Influence ties

Influence was measured by the following question: In the last meeting, you were influenced by.... The list of all group members was provided followed by a 3-point Likert-type scale allowing each member to evaluate how much or how often he / she had been influenced by every other members during the meeting: 1 = very little or rarely influenced; 2 = somewhat or sometimes influenced and 3 = greatly influenced or often.

Given the small group context, where all members minimally interact with one another, "0" was used only for people absent for a specific meeting. Ties with rating 1 were considered as ties of copresence.

We calculated the mean strength of ties over the 9 weeks for each dyad within each group (n = 200). The calculation was performed on oriented ties, that is to say, for example, that the dyad Aline and Alexia was considered separate from the dyad Alexia and Aline.

Reciprocity of influence ties

Influence ties reported for each meeting were categorized according to whether they were reciprocal, one way or mere co-presence ties (n = 1454). The strength of tie was taken into account in this categorization. Thus, a tie was considered a co-presence relationship when two people each rates the tie as 1. Where there was a rating of 1 and a rating of either 2 or 3, the relationship was considered non-reciprocal. When two people each claimed to have been influenced by the other (rating 2 or 3), the relationship was considered reciprocal.

Centrality

Valued degree and indegree centralities within each group were calculated. In a small group where members work together over a relatively long time, members are likely to interact with all other members minimally and to influence or be influenced by them. In order to take this into account, centrality was also calculated for dichotomized matrices for each strength.

Means of individual centralities were calculated for each week. Since groups were of different size, results were normalized to allow for comparison. These measure express the percentage of existing ties over all possible ties (Borgatti, Everett, & Freeman, 2002).

Semantic similarity

Discourse similarity is based on the analysis of the transcripts of the video recordings of group meetings. A similarity index was created based on an examination of words and synapsies³ present within the transcribed texts. Using a semantic thesaurus of synonyms and semantic proximities, words and synapsies are grouped into semantic fields. Only words and synapsies present in the data are used to define the semantic fields. Thus, in a given set of texts, the semantic field 'fight' could include words such as confrontation, antagonism, battle, combat, conflict, opposition or rivalry if and only if, they are in the data set.

The frequency of each semantic field in the corpus is then calculated. To take into account the fact that some semantic fields are more common than others in the data, the observed frequencies were normalized.

The next step is the calculation of the similarity index for each participant. Similarity points are given to each member of a dyad (within each group) each time they use the same semantic field – the minimum observed for the dyad is used. For example, if a semantic field has a normalized frequency of occurrence of 0.33 in the discourse of a member of the dyad and a frequency of 0.18 for the other member, then both will receive 0.18 point of similarity. This calculation is repeated for all the semantic fields in the data.

Finally, all points of similarity obtained by an individual for all semantic fields are added up and normalized for easier comparison. The individual similarity index thus created reflects the similarity of the discourse of one person with that of all of the other group members. The analysis of the texts and the calculations needed to create the discourse similarity index were performed using the *Sémato* semantic analysis software (Plante, Dumas, & Plante, 2005).

Results

Hypothesis 1 stating that the strength of the influence tie is positively related to discourse similarity is supported by the observed correlation between the mean tie strength and the mean similarity of discourse for dyads. The correlation is significant but moderated ($r = 0.42$, $\text{sig.} = .000$, $n = 200$). Thus, the correlation explains 17.8% of the observed variance (r^2). The distribution of dyads into two groups according to the average strength of their influence ties (see Figure 1) shows that similarity is significantly higher ($t = -5.514$, $df = 198$; $\text{Sig} = .000$) for dyads whose mutual influence tie is strong.

³ A *synapsie* is a significant functional discourse unit constituted as a phrase word. For example, *White House* and *Mother Earth* are synapsies since they have their own specific meaning apart from the words that constitute them.

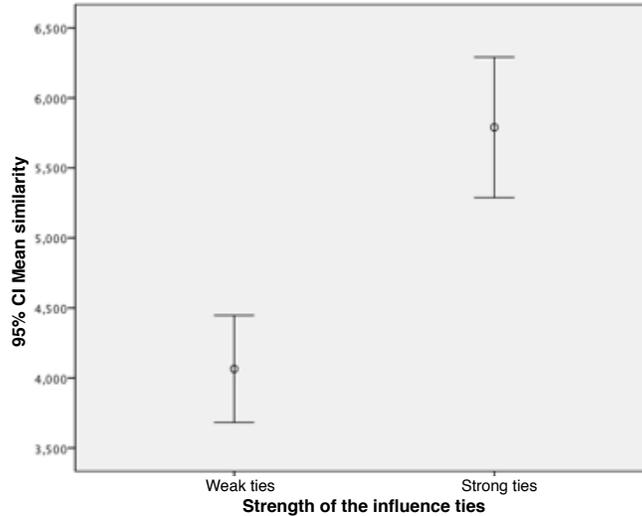


Figure 1. Discourse similarity for weak and strong influence ties for dyads.

Hypothesis 2 stating that dyads sharing a reciprocal influence tie would have higher discourse similarity than those with no reciprocal tie is confirmed by the significant difference in discourse similarity depending on whether the influence is reciprocal, non reciprocal or inexistent ($dl = 1451$; $f = 58.677$; $sig. = 0.000$). Figure 2 shows the mean level of similarity depending on the reciprocity of the dyadic tie and the tie strength. It should be noted that measures of reciprocity and of tie strength are relatively collinear ($r = 0.39$; $n = 200$).

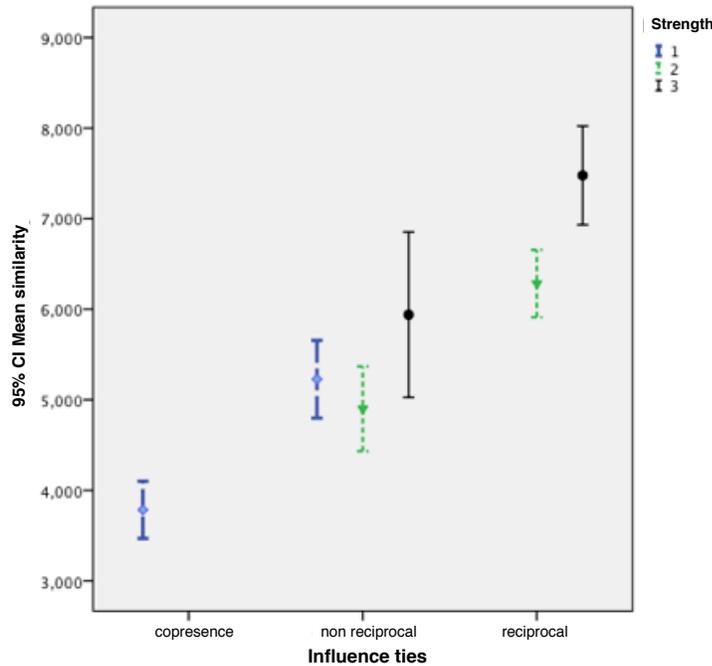


Figure 2. Similarity depending on reciprocity and tie strength

The correlations observed between degree and indegree centralities and the similarity index support hypothesis 3 and 5, but not hypothesis 4. The correlation between the mean for degree centrality and discourse similarity is positive and moderate ($r = .54$; $p < .001$) in accordance with H3 stating that the similarity of discourse between an individual and all of the other group members is positively correlated with his or her degree centrality in the influence network. However, H4 stating that indegree centrality should be more strongly correlated to discourse similarity is not supported. Indeed, correlations with indegree centrality are all slightly weaker than those observed with degree centrality.

Finally, the correlations calculated for the degree centrality of the dichotomized matrices for each of the tie strengths (copresence, 2 and 3) show that degree centrality is more strongly correlated to similarity for the stronger ties ($r = .57$; $p < .001$) than for ties of strength 2 ($r = .39$; $p < .01$). Moreover, relatively strong negative correlations were observed between discourse similarity and degree ($r = -.71$; $p < .001$) and indegree centralities ($r = -.57$; $p < .001$) for copresence ties. These results support and nuance H5 stating that both degree and indegree centrality would be more strongly positively correlated with discourse similarity for stronger ties (Table 1).

Table 1 – Correlations between centrality and similarity index

Influence ties		Correlations	Regression coefficient †
All ties	Valued degree centrality	.54**	.062 (.737)
	Valued indegree centrality	.44**	.090 (.551)
Strong influence (value 3)	Degree centrality	.57**	.083 (.667)
	Indegree centrality	.47**	.133 (.378)
Medium influence (value 2)	Degree centrality	.39*	-.006 (.996)
	Indegree centrality	.31*	.022 (.877)
Copresence (value 1)	Degree centrality	-.71**	-.704 (.000)
	Indegree centrality	-.57**	-.160 (.365)
Influence (values 2 et 3)	Centrality de degree	.53**	.090 (.609)
	Indegree centrality	.49**	.110 (.490)

* $p < .05$; ** $p < .01$ (two-tail)

† Non standard coefficients (standard error); * $p < 0.05$; two-tail

The analysis of the regression coefficients (Table 1) shows that the best predictor of discourse similarity is the degree centrality calculated for the network of copresence ties, which explains 50% of the variance for the similarity index. Given the negative correlation, this means that the more an individual has ties in the copresence network, the more his or her discourse tends to be different from other group members. Therefore, it would be more appropriate to consider that degree centrality in the co-presence network is a predictor of discourse dissimilarity.

Discussion

A first contribution of our study is empirical support for the alleged relationship between social network and discourse similarity (Carley, 1986; Monge & Contractor, 2003; Newman, 2004; Roth, 2007b). Indeed, globally our results show a significant association between influence ties and discourse similarity for members of workgroups that meet weekly. Thus, our results confirm the relevance, put forward by several authors (Carley, 1986, 1991; Monge & Contractor, 2003; Newman, 2004; Roth, 2007b), of the combination of social network analysis and discourse analysis for a better understanding of communication phenomena such as interpersonal influence.

A second contribution is related to the observation that the correlations for indegree centrality are not stronger than those for degree centrality. This suggests that the association between discourse similarity and social ties lies more with tie reciprocity than with tie direction. Thus, with regards to neocharismatic and transformational theories, our results provide empirical support for the assumption that discourse is an important mean of influence. However, the idea that the influential person is able to frame group members discourses (Antonakis et al , 2004; Fairhurst & Sarr, 1996) is being nuanced. Indeed, our results suggest that the framing process is not one-sided. In this regard, the ability of the influential person would also be related to his or her ability to listen and acknowledge the influence of others. This is consistent with the idea that people are influential mediators between different views of reality (Barge, 1989, 1996; Barge & Hirokawa, 1989; Weick, 1995) and with the idea that influence is being constructed within the discourse (Fairhurst, 2007).

Our third contribution is to unveil that the moderate correlation between valued centralities and discourse similarity hides opposite phenomena since the direction of the correlation is reversed depending on whether we look at ties of copresence or ties of influence. For ties of influence (2 and 3), the strongest is the tie the strongest is the tendency to have a similar discourse (respectively $r = .39$ and $r = .57$), a phenomena explaining from 15 to 33% of the variance. However, the correlation becomes negative for copresence ties ($r = - .71$): the more there are copresence ties with other group members (and therefore, the less there are influence ties), the more one tends to have a different discourse. This phenomenon explains 50% of the variance.

Note that this result is in contradiction with the assumption that the mere fact of having direct or indirect links allows for influence to happen (Meyer, 1994; Rice, 1993). In the groups we studied, it is clear that some members do not acknowledge the influence of some members despite the interactions necessarily implied by the participation in several group meetings.

Concerning the theory of implicit leadership, our results suggest that the correspondence between the implicit cognitive frame of group members of who qualifies as a leader (Hartog et al., 1999; Foti & Luch, 1992) could be mediated by the fact that the influential person uses words and expressions similar to those of other members. In a similar vein, the influential person may be perceived as more "prototypical" (Brown, Scott, & Lewis, 2004; Hogg et al., 2004) and transformational (Jordan, 2005; Meda, 2005) because the words and expressions he or she used are close to those used by other group members.

To better understand this phenomenon, we have explored if we could observe differences between groups of individuals whose similarity index was low, medium or high. We calculated the correlation between discourse similarity and valued centrality for each of these groups. Despite the small "n", two of these correlations are relatively strong and significant (Table 2). Thus, in the subgroup of those whose discourse show little similarity to that of all members, there is a positive correlation with valued centrality ($r = .64, p < .05$) while a negative correlation ($r = -.78, p < .01$) is observed in the subgroup of those whose speech is highly similar to that of all the members. In other words, in the subgroup of low-similarity people, the most similar are seen as the most influential, while the opposite is true for the high-similarity subgroup (Table 2).

To illustrate, let's imagine a workgroup composed of seven members where four are from the same disciplinary field and the other three are from different disciplines all together. Our results would reflect a propensity for the first four to acknowledge their mutual influence and to acknowledge the influence of the other three only when they say something they "recognize". Within the first four, it would be the one whose discourse stands out that shall attract attention while within the group of three it's the one having the most similar discourse to the group of four that will be listen to.

Table 2 – Exploratory correlations between centrality and discourse similarity

Classes	Correlations with valued degree centrality	n
Members with low similarity	.64*	11
Members with medium similarity	.19	12
Members with high similarity	-.78**	11

* $p < .05$; ** $p < .01$ (two-tails)

Similarity thresholds theory

If the empirical support to the postulated link between centrality in the influence network and discourse similarity is a relevant contribution to the field, the unveiling of the relationship

between semantic dissimilarity and the absence of influence ties constitutes also an original contribution rarely addressed in the scientific literature. These results highlight the need to rethink the relationships between social and sociosemantic networks outside of a linear view of their association.

Before going any further, let us restate that the relationship between influence and discourse is not seen here in terms of linear causality. From a social constructivist perspective, discourse and social relationships coevolve (Carley, 1991). Having a different discourse would lead to have less influence, which in turn would help maintain a distinct discourse. Conversely, holding a similar discourse would support the creation of strong ties of influence, which then would help to maintain the discourse similarity.

The inversion of the correlation for the ties of copresence suggests the existence of a similarity or influence threshold below which members could find themselves in a spiral of exclusion: the less influential one is, the less his or her discourse resemble that of others and the less his or her discourse resemble that of others, the less he or she is deemed influent. At the other end of the spectrum there seems to be another threshold above which, the relationship between similarity and influence is reversed.

The dynamic of the spiral of exclusion could be explained by the fact that low-similarity members would use different words and expressions that would call for clarification and explanation. This, in turn would lead other members to declare they are not influenced by them. One can imagine three scenarios: 1) people who speak little (similarity is then found low due to lack of comparables); 2) people who talk a lot, but on different themes or with different terms that are deemed irrelevant; 3) other leadership-related variables are present (implicit models [Hartog, House, Hanges, Ruiz-Quintanilla, & Dorfman, 1999], prototypicality [Brown, Scott, and Lewis, 2004; Hogg, Abrams, Otten, & Hinkle, 2004] direction and scope of speech [Fairhurst, 2007] communication strategies [Fairhurst and Sarr, 1996], etc.) favor the influence of a member over others and part of his or her discourse is then integrated within that of the other members.

The exploratory analysis of the differences between subgroups based on the strength of their semantic similarity points towards that, below an inferior threshold, influence and semantic similarity are positively correlated, while above a superior threshold, influence and semantic similarity are negatively correlated. In the latter case, it appears that when similarity is high, people are being noticed by the original elements included in their discourse. This is consistent with the expectancy violation theory (Burgoon & Bacue, 2009) in their studies of nonverbal communication, and it suggests a potential generalization of this theory stating that behaviours that deviate slightly from the norm attract attention.

Finally, the inversion of the correlation for ties of copresence can be related with the notion of "legitimate peripheral participation" proposed by Lave and Wenger (1991) where members of the periphery are in a time of "social learning". We may well think that people with some level of semantic similarity to all members of the network are "rewarded" influence when this similarity increases.

Conclusion

With the development of a sociosemantic approach of influence, our study first contributes to demonstrate through empirical observations the theoretical relationship between social network and discourse similarity. We observed a significant correlation between a similarity index of discourse and interpersonal influence as measured by the centrality in the network of influence. The more detailed analysis we conducted in order to explore the difference between subgroups formed of low, medium and high-similarity individuals reveals the complexity of the relationship between discourse and influence that appears a lot less linear than would indicate the correlations observed globally.

All together, our results suggest that the association between influence and the sharing of ideas evolves throughout interactions. Mika (2005) proposes the concept of 'emergent semantics' to describe the overall effect emerging from interactions. Thus these emerged sociosemantic networks give rise to a space where the individual who is semantically connected to most of the other group members, appears as a mediator, while the individual who does not fit in this space would see his or her influence reduced, if not annihilated. The strong correlation we have observed between dissimilarity and the absence of influence ties suggests the existence of a semantic similarity threshold below which an individual is excluded from the network of influence.

We got those results because we have been able to analyze the discourse of members in bona fide groups over a sufficiently long period. Indeed, the results we have presented appear only when we consider the means for all meetings. From one week to the next and from one group to another, the variability of observations is very large and does not allow for clear and significant results.

In addition, for the semantic data, our study focused on all of the semantic fields automatically identified using a text analysis software. A more detailed analysis, based on a qualitative thematic categorization could narrow the results. For example, an analysis taking into account only the themes directly related to the group task may reveal other specificities of the relationship between influence and discourse. In particular, such an analysis would permit the exploration of shared cognitive frames.

Moreover, studies taking gender into account showed differences between men and women in terms of their influence and according to their communication style (Carli, 2001). For example, the influence of women would be more focused on a transformational and community discourse, while the influence of men would be more transactional and more focused on potential rewards (Eagly, Johannesen-Schmidt and van Engen, 2003). Gender could have an impact on the use of certain semantic fields. The groups studied here were predominantly composed of women; hence we were not able to do a comparative analysis based on gender.

These results and proposed research topics are all arguments in favour of going further in exploring sociosemantic and social networks, intertwining structural and discursive approaches to better understand the role of communication in various social phenomena.

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