INTERACTION CHARACTERISTICS OF SUCCESSFUL CONTRACTOR’S REPRESENTATIVES

Christopher A. Gorse¹, Stephen Emmitt¹, Mike Lowis² and Andrew Howarth³

¹School of the Built Environment, Leeds Metropolitan University, Leeds LS2 8BU, UK,
²School of Behavioural Studies, University College Northampton, NN2 7AL, UK,
³School of the Built Environment, University of Nottingham, Nottingham, NG1 2RD, UK

The ability of construction professionals to use communication to influence and gain control over their environment ensuring project success must be a subject of real interest, yet little research exists in this area. The aim of this study was to identify the nature of contractor’s representatives’ interaction during project team meetings. Following the observations of group interaction, the company’s directors differentiated the contractor’s representatives into four categories of effectiveness. The professionals’ degree of effectiveness was based on their previous ability to repeatedly deliver contracts on time and within budget. Significant differences were found between the interaction of those considered more and less effective. Those considered more effective used a broader range of communication acts. The research data for this project were collected and classified using the Bales’ Interaction Process Analysis method, supported by qualitative observations. Finally, the characteristic interaction patterns of contractor’s representatives found to be more successful are proposed.

Keywords: communication, construction-professional, project-success, meeting.

INTRODUCTION

During project team meetings contractors’ representatives assume lead positions, being responsible for the management of the construction process. Their ability to influence the integration and co-ordination necessary to realise design and management information is a function of interaction with other professionals. The accomplishment of major projects is achieved through interlocked co-ordinated activities (Kreps 1989). However, the effectiveness of teams and the degree of co-operation between members can depend on the communication strategies employed (Ackoff 1966; Hollingshead 1996).

Contractors’ representatives are tasked with directing and fostering a communicative environment that facilitates the delivery of the construction project. The interpersonal interaction used within teams should break down barriers, manage conflict, reduce defensive behaviour and encourage communication that enables the group to perform to the best of its ability. If inappropriate communication and decision-making strategies are employed groups under perform (Brown 2000). Although multidisciplinary teams propose and consider a wider range of solutions to a problem than individuals do (Ysseldyke, Algizzine and Mitchell 1982; Brown 2000), if interaction is not directed the alternatives proposed could be a result of goal ambiguity (Bales 1953).
INTERPERSONAL AND GROUP COMMUNICATION ACTS, BEHAVIOURS AND BARRIERS

Groups need to be directed; however, those assuming leading roles within the group may stifle potential solutions through ineffective use of interaction. Group members often overrule individual expertise and experience (Yoshisa, Fenton, Maxwell and Kaufman 1978); professionals tend to rely on their own, often incomplete, knowledge rather than consulting with other specialists (Gameson 1992; Lee 1997). Although those leading the group should offer direction they should also ensure that members are allowed to contribute their specialist knowledge. Shepherd (1964) suggested that successful groups have open and full communication; with ideas, feelings and information being exchanged freely. To improve the success of communication, flexible and spontaneous interaction should be used to reduce defensiveness (Gibb 1961; McCann 1993). However, open communication may not be forthcoming as some interaction behaviours may be avoided, especially where individuals are unfamiliar with each other (Bales 1953). Also, when professionals have difficulty in understanding issues being discussed they may be reluctant to ask for further explanation. Professionals may not seek help, even when help is required, as help-seeking behaviour implies incompetence and dependence (Capers and Lipton 1993; Lee 1997). Most people are not very good at asking questions; however, asking questions is the single most effective way to extract ideas and information (Ellis and Fisher 1994).

Those leading the group must also deal with any conflicts that emerge. It is inevitable that conflict will occur within project teams (Ellis and Fisher 1994; Loosemore 1996); however, there is enormous disagreement over the effects of conflict on the group’s communication (Pondy 1967; Folger and Poole 1984; Ellis and Fisher 1994). Conflict can be natural (functional, constructive) or unnatural (dysfunctional, destructive) (Ellis and Fisher 1997). Natural conflict is described as the intended or actual consequence of encounter resulting in stronger participants benefiting from the clash. Unnatural conflict is where a participant enters into the encounter intending the destruction or disablement of the other. The contractor’s representatives who have greatest influence over the group must develop strategies for managing the conflict that occurs.

Ellis and Fisher (1994) in their review of conflict research noted the benefits and disadvantages of conflict. Benefits included:

- exposure to more issues, the act of challenge forces others to listen to different perspectives; increased cohesiveness, research has found that groups that work through tension often feel closer;
- improved decision quality, the conflict forces participants to justify ideas;
- increased motivation, conflict is a sign of personal interest.

Disadvantages that may be experienced included:

- decreased group cohesion, prolonged unresolved conflict decreases cohesiveness;
- ill feelings, none relevant distasteful conflict damages relationships;
- groups that are unable to overcome the conflict fall apart.

Bales (1950; 1953) found that conflict, even when constructive, leads to tension that can damage group cohesion; however, too much attention to cohesion stifles
constructive conflict and threatens the group’s ability to solve problems. Cline (1994) identified the importance of functional conflict in avoiding ‘groupthink’ and improving the decision-making process. Although, moderate levels of conflict may be productive (Hare 1976), conflict especially when supported with negative feedback can be stressful (Shapiro and Leiderman 1967). Episodes of interaction that become emotional tend to be more salient, when professionals report their interaction they recount emotional events much easier than other events (Loosemore 1998).

Any tension that develops can be removed by positive emotional acts (such as, joking, showing solidarity and praise) and negative emotional acts (such as disagreements, expression of frustration and aggression) (Bales 1950; 1953). When emotional issues are not addressed, the increased tension may inhibit the group’s performance (Bales 1953; Keyton 1999; Poole 1999).

Bales (1953) argued that if groups are to perform effectively positive reinforcement: including agreeing, showing solidarity, being friendly and helping releases tension are needed to offset negative reactions (showing tension, antagonism, anger etc.). To accomplish tasks successfully positive acts need to be in excess of negative act (Shepherd 1964; McGrath 1984; Keyton 1999; Pavitt 1999). A larger positive to negative ratio facilitates and regulates the flow of interaction among members by increasing moral, motivation and satisfaction (Bales 1953; Keyton 1999).

**METHODOLOGY**

The literature reviewed suggested that interaction by group members should embrace a full range of communication acts, rigorously dealing with task issues and ensuring relationships are maintained and that those who lead the team should facilitate such interaction. The methodology that was adopted to record the type and nature of communication used by professionals was the Bales Interaction Process Analysis (IPA) system. Keyton (1999) noted that the Bales method is able to capture data on relational and task-based communication. The Bales’ (1950) IPA method was used to classifying interaction statements into one of twelve categories. Each category was classified as either a socio-emotional or task-based act (Table 1). The smallest part of the interaction coded and analysed was a sentence or a statement of meaning. Analysis of individual words would be impractical when observing and recording interaction in real time, and would be of little use when analysing the results. The person speaking and the person being addressed were also recorded.

The major advantage of observer rating, as used in Bales’ IPA, is that, once the researcher is allowed into the environment where communication is taking place, “the data [ratings] can be easy to obtain” (Clark 1991:109). Coding systems are used by communication researchers to group together related communication acts under a common heading. By categorising communication acts, large quantities of data can be processed and analysed using statistical packages. Different categories can be used to identify specific aspects of communication that can be observed, tabulated and compared. A coding system “…is, very simply, the lens with which he or she [the researcher] has chosen to view the world” (Bakeman and Gottman, 1997:15).
Table 1 Grouping of Bales’ individual IPA categories (Bales 1950:9)

| CATEGORY DESCRIPTION | Social-emotional area: | Task Area: Neutral  
Positive Reactions | Attempted answers | Neutral  
Questions | Negative reactions |
<table>
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<tbody>
<tr>
<td>1: SHOWS SOLIDARITY – raises others status, gives help, reward</td>
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<tr>
<td>2: SHOWS TENSION RELEASE – jokes, laughs, shows satisfaction</td>
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<tr>
<td>3: AGREES – shows passive acceptance, understands, concurs, complies</td>
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<tr>
<td>4: GIVES SUGGESTION – direction, implying, autonomy for others</td>
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<tr>
<td>5: GIVES OPINION – evaluation, analysis, express feeling wish</td>
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<tr>
<td>6: GIVES ORIENTATION – information, repeats, clarifies, confirms</td>
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<tr>
<td>7: ASKS FOR ORIENTATION – information, repetition, confirmation</td>
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<td></td>
<td></td>
<td></td>
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<tr>
<td>8: ASKS FOR OPINION – evaluation, analysis, expression of feeling</td>
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<td></td>
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<tr>
<td>9: ASKS FOR SUGGESTION – direction, possible ways of action</td>
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<tr>
<td>10: DISAGREES – shows passive rejection, formality, withholds help</td>
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<td></td>
<td></td>
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<tr>
<td>11: SHOWS TENSION – asks for help, withdraws out of field</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12: SHOWS ANTAGONISM – deflates others status, defends or asserts self</td>
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</tbody>
</table>

Poole et al. (1999:106) made an important point about all coding systems: “The design of coding schemes involves a complex set of choices, and these choices determine what claims the resulting data can support”. The findings of a coding system are tied to the method used to capture the data. This limitation restricts the amount of detail that can be extracted from observations. Other methods, such as conversation analysis, extract a much greater level of detailed information from discussion; however, such methods are not without their own limitations. Due to the amount of detailed information collected more qualitative methods often restrict the amount of data that can be systematically analysed. For example, rather than quantifying and classifying interaction, Hugill (2001) adopted an ethnographic approach making use of conversation analysis to study group interaction during construction progress meetings. Conversation analysis is concerned with the contextual sensitivity of language with a focus on talk as a vehicle for social action. Investigations using conversation analysis can only be pursued through intensive qualitative analysis of interaction events, because conversation data proves quite resistant to treatment in terms of normal sociolinguistic variables and quantification (Drew and Heritage 1992). Transcripts or audio-recordings of interaction are required to provide the detailed data necessary for conversation analysis. The detail of analysis can often restrict the amount of data analysed, for example, although Hugill recorded thirty hours of construction team discussion he was only able to analyse less than one hour of data.

Although the use of conversation analysis does not lend itself to studies involving multiple observations of different projects, qualitative observations are considered to be important when examining group interaction.

Different perspectives are gained through the use of different methodologies (Seymour and Hill 1993). The use of quantitative and qualitative research increases the detail of the information collected thereby improving the overall methodology and hence reducing some of the research limitations (Fielding and Fielding 1986; Mior et al. 1998). Thus, qualitative identification of interaction behaviour, which would aid interpretation of quantitative data, is important. Following each meeting observed brief notes were made on the nature and intensity of the interaction. This qualitative information helped interpret and contextualise the interaction recorded under each of the Bales’ IPA categories.

Before observing interaction tests were carried out to ensure that there was a significant level of agreement between observer classification and the established
Interaction characteristics of contractor's representatives

protocol. A list of 100 different statements were reproduced from the Bales’ (1950) protocol. Intra-coder reliability tests were undertaken. The coder assigned a Bales’ IPA category to each of the statements. Using Cohen’s kappa test to examine the results against the protocol, scores in excess of 0.95 were achieved. It is also important to ensure that coding systems are stable and reproducible by multiple observers. Where two observers simultaneously record interaction, the Chi-square test at 0.50 probability level (not P= 0.05), or above, can be used to check for agreement (Bales 1950). This measure demonstrates that the system being used is common to observers although not exact, a small amount of variation is expected with all observations of live interaction (Bales 1950). The intercoder score using the Chi-square test was $\chi^2=4.916$, df=8, $\rho=0.766$, demonstrating a satisfactory level of agreement.

Data were gathered from ten construction projects, in total 36 site meetings were observed, involving 96 different professionals, 26 of the professionals represented the contractor.

The data collected at each meeting included the identification of the professional who initiated communication; the professional at whom the communication is predominantly aimed; and the communication act using the IPA categories.

Each of the contractor’s representatives were awarded a performance value, based on their ability to repeatedly contribute to successful project outcomes. The managing directors provided the perceived value of effectiveness using historic data from previous projects. A value of one indicates contractor’s representatives who have a greater association with projects that resulted in a profitable outcome (most successful). A value of five shows a greater association with projects that were not as profitable (least successful). All of the contractor’s personnel were rated above satisfactory (4 to 1).

RESULTS AND DISCUSSION

The results presented below (Tables 2,3) were interesting. In some of the IPA categories, there was a clear relationship with the perceived ability of the individual and the levels of interaction in a particular category, the interaction of effective contractor’s representatives being considerably different to those rated less effective. The following section identifies interaction characteristics that are consistent with contractor’s representatives who were rated as most effective (1) and least effective (4).

Using the Pearson chi-square test, the interaction results of the four ratings of contractor’s representatives were significantly different. The most effective contractor’s representatives used greater amounts of positive and negative emotional communication, higher levels of requesting task-based interaction and lower levels of giving task-based interaction, than the representatives perceived to be less effective.

Those considered more successful used higher levels of emotional communication. The highest level of positive emotional interaction was found in the column one (Table 2), representing the contractors perceived to be the most effective, and those contractor’s representative that are perceived to be the least effective used the lowest level of positive emotional interaction.

Table 2. Results of task-based and socio-emotional communication acts against perceived effectiveness of contractor’s representative
The results relating to negative emotional interaction are significant. Higher levels of negative emotional communication occurred in the contractor’s representatives rated more effective (representatives that are rated one and two) than those rated less effective. An important finding was that those representatives perceived to be less effective hardly used negative emotional categories, and also made considerably less use of the positive socio-emotional categories. The observations are consistent with the research reviewed. Those who are considered most effective are not avoiding confrontation but engaging in conflict and managing it, making use of positive emotional exchanges to defuse tension.

Differences were also noted in the contractor’s representatives’ use of giving and requesting task-based interaction. The contractors perceived to be the most effective were those with the highest levels of requesting task-based interaction. It would seem that contractor’s representatives perceived to be least effective were reluctant to make requests to others. The lower rated of contractor’s representatives predominantly used ‘giving’ task-based interaction, resulting in lower usage of all other categories than was found in the representatives that were considered to be most effective. In accordance with the literature reviewed ‘question-asking’ and seeking information has positive attributes; in this study those who were considered most effective predominantly used such communication acts.

A number of the individual interaction categories (Table 3) presented showed a stronger association with contractor’s representatives rated more effective (rated one and two) than those rated less effective.

With regard to interaction category one (showing solidarity), little inference can be made on the individual professionals’ results due to the very low levels observed. Although IPA two (showing tension release) was lower in the case of contractor’s representatives rated one and two (those considered to be more effective), the percentages recorded across the contractor’s representatives abilities were quite similar. Professionals perceived to be the most effective exhibited higher levels of agreeing, the levels of use of category three steadily declined as the rating of the contractor’s representatives reduced.

Higher levels of IPA four (giving suggestions) were associated with contractor’s representatives rated one and two, this was the only ‘giving’ task based category that was higher in those considered most effective. An examination of category five (giving opinion) found that the contractor’s representatives rated one and two, when added together, were lower than the values for representatives rated three and four; however, the individual figures vary. The levels of IPA six (giving information) were lower in the cases of those professionals considered excellent (24%) and gradually increased in each of the ratings, being highest in the professionals rated satisfactory (47%), the lowest ranked contractor’s representatives.
Table 3: Results: Interaction process analysis categories against effectiveness of contractor’s representatives

<table>
<thead>
<tr>
<th>Contractor rating</th>
<th>1</th>
<th></th>
<th>2</th>
<th></th>
<th>3</th>
<th></th>
<th>4</th>
<th></th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interaction category</td>
<td>No.</td>
<td>%</td>
<td>Adj</td>
<td>No.</td>
<td>%</td>
<td>Adj</td>
<td>No.</td>
<td>%</td>
<td>Adj</td>
</tr>
<tr>
<td>1: Shows solidarity</td>
<td>2</td>
<td>1.3</td>
<td>1</td>
<td>0</td>
<td>-1.6</td>
<td>1</td>
<td>2.2</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>2: Shows tension release</td>
<td>11</td>
<td>-2</td>
<td>30</td>
<td>1</td>
<td>-5</td>
<td>3</td>
<td>2</td>
<td>7</td>
<td>7</td>
</tr>
<tr>
<td>3: Agrees</td>
<td>117</td>
<td>6.2</td>
<td>169</td>
<td>5</td>
<td>-3.4</td>
<td>9</td>
<td>4</td>
<td>1.0</td>
<td>20</td>
</tr>
<tr>
<td>4: Gives suggestion</td>
<td>178</td>
<td>5.3</td>
<td>535</td>
<td>17</td>
<td>2.5</td>
<td>26</td>
<td>13</td>
<td>-1.2</td>
<td>66</td>
</tr>
<tr>
<td>5: Gives opinion</td>
<td>265</td>
<td>23</td>
<td>858</td>
<td>27</td>
<td>1.6</td>
<td>76</td>
<td>37</td>
<td>3.8</td>
<td>135</td>
</tr>
<tr>
<td>6: Gives orientation</td>
<td>287</td>
<td>24</td>
<td>1054</td>
<td>33</td>
<td>-6.8</td>
<td>1054</td>
<td>33</td>
<td>-6.8</td>
<td>1054</td>
</tr>
<tr>
<td>7: Asks for orientation</td>
<td>124</td>
<td>11</td>
<td>44</td>
<td>239</td>
<td>7</td>
<td>-5</td>
<td>6</td>
<td>3</td>
<td>2.5</td>
</tr>
<tr>
<td>8: Asks for opinion</td>
<td>76</td>
<td>6</td>
<td>4.2</td>
<td>94</td>
<td>3</td>
<td>-3.0</td>
<td>1</td>
<td>1</td>
<td>-2.4</td>
</tr>
<tr>
<td>9: Asks for suggestion</td>
<td>77</td>
<td>7</td>
<td>3.8</td>
<td>122</td>
<td>4</td>
<td>-3.2</td>
<td>4</td>
<td>2</td>
<td>-1.8</td>
</tr>
<tr>
<td>10: Disagrees</td>
<td>27</td>
<td>2</td>
<td>6</td>
<td>77</td>
<td>2</td>
<td>2.2</td>
<td>0</td>
<td>0</td>
<td>-2.1</td>
</tr>
<tr>
<td>11: Shows tension</td>
<td>11</td>
<td>1</td>
<td>-2</td>
<td>37</td>
<td>1</td>
<td>1.7</td>
<td>0</td>
<td>0</td>
<td>-1.4</td>
</tr>
<tr>
<td>12: Shows antagonism</td>
<td>4</td>
<td>0</td>
<td>3.7</td>
<td>0</td>
<td>0</td>
<td>-2.6</td>
<td>0</td>
<td>0</td>
<td>-0.4</td>
</tr>
</tbody>
</table>

Total interaction observed: 1179, 3216, 204, 546, 5145

(Adj = Adjusted residuals - standardised difference between observed and expected values.)

Pearson chi-square $\chi^2 = 253.292$. df = 33, $p = <0.001$

IPA seven (requesting information) and eight (requesting opinions) were higher in the categories associated with professionals who were perceived to be most effective. The levels of interaction associated with IPA nine (requesting suggestions), based on the perceived effectiveness of the contractor’s representatives, showed no meaningful trend (Table 3) although the combined value of contractor’s effectiveness rated one and two are greater than three and four. This would suggest that in all of the categories associated with requesting task-based interaction, higher levels were associated with the contractor’s representatives who were perceived to be most effective.

Disagreeing with others (IPA ten), and showing tension (IPA eleven) were found to be a trait associated with effective managers. Those rated less effective were reluctant to disagree with the other professionals, show negative emotions or engage in conflict. IPA twelve (showing antagonism) was observed only eight times during this research, due to the limited data, no conclusion can be made regarding its use.

CONCLUSION

Many of the observations made support the findings of previous research conducted in different environments and contexts. Those contractors who are considered most effective use a broader range of communication acts to achieve their objectives. Less effective professionals tend to limit their use of communication avoiding emotional exchanges; predominantly using task-based communication. While it is important to have open exchanges of information, it is essential that the interaction is used to explore the full potential of the group to achieve the project objectives. Those considered most effective seek information and critically explore suggestions, this is achieved by asking for information then prompting for explanations and finally making others commit to their proposal. If information is not understood further explanation is requested. Effective professionals do search for further information and explanation of issues, but they also direct the group ensuring the group is productive.
attempting to solve as many problems as possible within the time available, avoiding over emphasis on issues that seem irrelevant. When issues hold a high priority emotion is used to convey the importance of the message. Emotion can be used to show how strongly someone disagrees or agrees with a situation, it can be used to show commitment to a proposal and to support and dissuade another. Socio-emotional interaction plays a key role maintaining the relationships within the project team.

The contractor’s representatives considered most effective use emotional exchanges to manage functional conflict. Negative emotions that create conflict are used to show when contractors are unsatisfied with other professionals or may be used to challenge another professional’s proposal. Such actions ensure that others are aware of the contractor’s priorities and that any suggestions proposed are fully explored before being accepted. The conflict caused by negative emotion is highly salient; other professionals have a tendency to remember such encounters above other incidents. Following conflict positive emotions are used to help disperse tension to ensure relationships are repaired and the impact of the conflict reduced. Positive expression used by the most effective contractors exceeds negative interaction. Effective contractors help reduce tension by showing support, agreeing, being friendly, joking, joining in with laughter.

This study has provided a small insight into an under researched area. Further research is required to explore communication dynamics from different perspectives in different construction environments. The use of different research methods to study interaction is considered important. Quantitative methods such as the Bales IPA used allows the analysis of large data sets; however, qualitative methods, such as conversation analysis, may provide detailed data that support understanding of the nature of trends found.

REFERENCES


