Wired attraction: effects of ICT use on social cohesion in organizational groups
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Chapter 10
Summary and Conclusions

As some, including Morton, have suggested (see also section 4.3), "All dimensions of the organization will have to be re-examined in the light of the power of the new ICT..." (1996:150). This dissertation has explored an aspect of the social structure - i.e. social cohesion - of organizations in relation to ICT. This last chapter summarizes our theoretical and empirical findings and presents our final conclusions. The last two sections discuss various theoretical and practical implications.

10.1 Summary

This dissertation presents theoretical and empirical findings concerning the effects of ICT use on social cohesion in an organizational context. Our focal research question here was: "What effects does the use of Information and Communication Technology in organizations have on social cohesion in task-related entities within these organizations?" In examining this question, we divided it into four sub-questions. These, in turn, were addressed either from a theoretical perspective only, or both theoretically and empirically. The sub-questions were presented diagrammatically in an overall research model (figure 1.2). It was assumed that studying the effects of ICT on social cohesion would entail examining (at least) the three relationships between: the formal organizational structure (the arrangement of groups); the technical structure (ICT, regarded as the broad range of telecommunication networks, hardware and software); and the organization as a "social entity," in which a certain degree of cohesion may exist.

Social cohesion in an organizational context
The first sub-question concerned the definition and conceptualization of cohesion in organizational groups: "How can social cohesion be defined and positioned in relation to other social concepts within an organizational context, and what factors are important to the development and maintenance of social cohesion in task-related groups in organizations?" In
discussing several approaches to social cohesion, as well as the characteristics of an organizational context, we ultimately decided to approach cohesion as a form of social attraction (Chapter 2). This form of attraction, which is considered to be the result of a social process, is not directed at individuals of a group, but at the prototype that a group embodies. This approach allows us to study cohesion in smaller - as well as larger - groups that are not formed on a voluntary basis.

Moreover, the approach incorporates the role of intergroup relations. Based on the Social Identity and Self-categorization Theories, it is argued that people try to maintain a favorable evaluation of their own group(s). As a result, intragroup attraction (social attraction to ingroup members) may vary in terms of positiveness, but is usually not negative. Intergroup attraction (social attraction to members of other groups) will be less positive, and may even be negative. The stronger the group members’ attraction towards their own group, the less open they will be towards other groups and vice versa. Since (large) organizations comprise several levels of entities or groups, it can be argued that if employees are more open or attracted to other groups at one level (i.e. project teams) the ingroup attraction at the next level (i.e. a department comprising several project teams) will increase.

In order to gain more insight into the assumed value of social cohesion for organizations, the concept has been positioned in relation to other social concepts, or processes. Social cohesion can be described as one of the generators of social capital, which is considered to be highly valuable to the smooth functioning of organizations. Trust, associability and organizational citizenship behavior are concepts that are considered either as part of, or as strongly related to social capital. Reciprocal relationships between cohesion, commitment and cohesion and social identification were found. This positioning of social cohesion in an organizational context is helpful in translating the results of this research project into practical implications for organizations.

Social cohesion was not only defined and positioned in this study, but was also conceptualized (Chapter 3). Several antecedents and consequences of social cohesion in organizational groups were identified. Propinquity, (actual) similarity, group size, group maturity, interaction and effective leadership were established either as antecedents of social cohesion, susceptible to the (in)direct effects of ICT use. Social identification was also included in the conceptual model of cohesion, and recognized as a condition necessary to the development of social cohesion. The following aspects were identified as the consequences, or phenomenology, of cohesion: “evaluation of the group,” “perceived similarity,” and “cooperative behavior.” These consequences formed the basis for the operationalization of cohesion, which was used in the empirical part of this research. Given the lack of a useful measure of social cohesion as a form of social attraction in an organizational context, part of this dissertation devoted attention to the development of such a measure, called the Social Attraction Scale (SAS). In a scale construction study, we tested sixteen items measuring the evaluation of the group, perceived similarity and cooperative behavior, and found them to be reliable and valid (Chapter 8). Examining the SAS in our empirical study of the effects of ICT on cohesion, once again the scale proved itself.
**Effects of ICT/CMC on social cohesion: hypotheses**

ICT use is assumed to have an indirect and direct effect on social cohesion. (As mentioned earlier, social cohesion involves the three relationships between the technical structure, organizational structure and the organization as a social entity, relationships addressed by the second, third and fourth sub-questions). These effects stem from three important characteristics of ICT: 1) it overcomes time and space; 2) it connects people and groups of people; and 3) it increases control.

We began by examining the relationship between the technical structure (ICT use) and the formal organizational structure: "What trends and shifts with respect to the formal organizational structure can be perceived and predicted as the result of ICT use in organizations?" Given the findings of other researchers and the characteristics of ICT outlined above, it can be assumed that the use of ICT in organizations will lead to new organizational forms, characterized by: 1) a flat structure, resulting from a decrease in vertical complexity and middle management; 2) a lean and more integrated structure, resulting from a decrease in supporting and executing staff, as well as a decrease in horizontal complexity; 3) a dynamic structure, resulting from an increase in temporary teams and blurring organizational boundaries; and 4) geographic flexibility (employees working from physically dispersed work places, and regardless of time) (Chapter 4).

These assumed structural changes and shifts form the basis for the answer to the third sub-question, which concerns the indirect effect of ICT use on cohesion. In light of that, we tested the tenability of these assumptions empirically as well (Chapter 7). Using a (multiple) case study design, we explored the assumptions in five relatively large organizations that varied in the intensity and duration of their ICT use. The results of this study supported the assumptions. One exception was the assumed decrease in the support staff, which was supposed to result in leaner and more integrated organizations. One explanation for this finding could be the increase in ICT support staff. Another plausible explanation is the fact that work processes become more complex and that organizational developments and/or changes pick up pace. The results of this explorative study cannot be simply generalized, since we only included a small number of organizations. Even so, these findings, together with the other research results discussed in this dissertation, provide a sufficient basis for confidence in the tenability of the assumptions formulated.

The third sub-question considered the impact of these structural changes on antecedents of social cohesion: "What effects do the changes or shifts in organizational structures referred to in sub-question 2 have on social cohesion in task-related groups in organizations?" These structural changes serve somehow to alter several of the identified antecedents of cohesion. In the discussion of these effects, it emerged that a distinction should be made between relatively smaller groups (small scale) and relatively larger groups (large scale).

On a small scale (work teams, project teams etc.), the shifts expected appear to affect several antecedents of cohesion negatively, namely by: 1) decreasing physical propinquity; 2) decreasing the maturity of groups; 3) decreasing interaction between group members; and 4)
increasing variety in the backgrounds of group members. Moreover, characteristics of what is termed the new organizational form may weaken identification processes in relatively small groups. On a larger scale, we can expect an effect in the opposite direction. Taking into account large entities in organizations, the characteristics of the new organizational form have fairly positive consequences for the antecedents of social cohesion, primarily by stimulating interaction processes throughout the organization. New communication patterns emerge as a result of work in temporary teams, and the integration and blurring of organizational boundaries. Employees simply know more of their colleagues, and are less restricted by the organizational structure in their choice of the people they want to communicate with.

Based on these theoretical - and partly empirical – findings, we assumed that there is a difference in the effect of ICT use on smaller and larger scales. We formulated two hypotheses, arguing that the use of ICT in general has a negative effect on social cohesion in relatively small (task-related) groups, and a positive effect in relatively large organizational (task-related) groups.

The fourth sub-question examined the direct relationship between ICT use and social cohesion, focusing especially on the effects of ICT applications that support communication processes: "What effect does the use of computer mediated communication (CMC) by organizational members have on social cohesion in task-related groups in organizations?" With regard to this relationship, the assumed effects should not only be ascribed to the three characteristics of ICT described above, but also to its "poorness" as a communication medium. Again, we could hypothesize a difference between the effect in smaller and larger organizational groups.

In relatively small groups, CMC replaces FTF and in doing so, alters communication processes, mostly because of the difference in "richness." FTF can be considered a richer medium than CMC, due to characteristics, such as direct feedback and the ability to include non-verbal cues. FTF can contribute to more intense communication processes. Thus, replacing FTF by CMC can, to some extent, have a restraining effect on the development or maintenance of social cohesion in small groups. In larger entities, FTF is not likely to be replaced by CMC. CMC, with its ability to connect people and groups of people, is rather added as a medium useful for communicating on a larger scale. Moreover the lack of non-verbal cues, or the "poorness" of CMC can have positive effects in large entities. Research studies into the social impact of CMC have found that CMC may facilitate communication processes between people who do not know each other very well. This medium can therefore, be considered very appropriate for use at a larger scale, making interaction in larger groups easier.

Two hypotheses concerning the direct effect of CMC on social cohesion were formulated. In keeping with the two hypotheses regarding the indirect effect of ICT in general, these hypotheses contend that CMC has a negative effect on social cohesion in relatively small groups, and that a positive effect can be expected of its use in relatively large groups.
Empirical findings

The hypotheses formulated concerning the effect of ICT/CMC on social cohesion in organizational groups were empirically tested in four organizations (Chapter 9), using the Social Attraction Scale mentioned earlier. Since the theoretical discussion provided no definitions for “relatively small” and “relatively large,” this study was partly explorative. Before we tested the actual hypotheses, we formed different provisional size categories, and then adapted them based on a preliminary exploration of the empirical data. We examined the data gathered using two entrances. First, we described each case thoroughly, exploring structural characteristics, the social impact of CMC and differences between size categories. Subsequently, we performed a cross-case analysis for each size category.

Several differences emerged between the cases included. These fell in line with the theoretical assumptions underlying hypotheses 1a & b and 2a & b. In the cases that showed high frequencies of ICT use, ICT was indeed experienced as a substitute for other media, and the assumed relationships between ICT use and several antecedents of cohesion were found. Cases that showed lower frequencies of ICT use did not present these results. In comparing scores for social attraction in all four cases, we found that the cases with high frequencies of ICT use showed lower scores on social attraction in the smallest group size category (5 to 29 members). However, the effect of CMC in particular appeared to be stronger than ICT use in general. One explanation may be that structural changes result from ICT use, though not (yet) to the extent needed to affect social structures in the organizations.

After exploring and describing the empirical data for each case separately, we performed cross-case analyses in order to test the hypotheses. The results of these analyses, consisting of a regression analysis and a test of the conceptual model (figure 5.1) using multivariate analysis, do indeed indicate a difference between the effect of ICT/CMC in smaller and larger groups. Since we found a significant correlation between size and social attraction in the smallest size category (5-30), we split this category once more in three subcategories. We conducted a regression analysis in each size category. Two subcategories of small groups showed a negative effect in explaining the variance in social attraction for CMC (10-14 members) and ICT use in general (15-29 members). In the largest size category (50-100), we found a positive contribution for CMC. The size categories that showed an effect for either ICT use in general, or CMC within the group, were included in testing the conceptual model (using multivariate analysis). This model proved to be applicable to all three size categories. Again, in the small size categories, we found negative effects for either CMC within the group, or ICT use in general. By contrast, we encountered a positive effect for CMC within the group in the largest size category. These results support hypotheses 1a, 2a and 2b.
10.2 Conclusions and discussion

The focal research question in this dissertation can now be answered by listing several concrete conclusions, based on our theoretical and empirical findings:

1) The use of Information and Communication Technology (ICT) has an indirect effect (by altering organizational structures) and a direct effect (involving the use of ICT for communication activities) on social cohesion in organizational task-related groups.

2) These effects stem from three potential capacities of ICT, namely
   1) to overcome time and space;
   2) to connect people and groups of people; and
   3) to increase control,
   as well as from the lack of non-verbal cues in CMC.

3) The indirect effect of ICT use involves the emergence of a new organizational form characterized by a flat, integrated and dynamic structure, in which people work in temporary or flexible teams, and work structures function independently of time or geographical distances.

4) The direct effect of ICT use involves the substitution of FTF by CMC in relatively small groups and the addition of CMC to more traditional media in relatively large groups.

5) In relatively small organizational groups, ICT use is likely to affect social cohesion negatively - either directly, or indirectly.

6) In relatively large organizational groups, ICT use is likely to affect social cohesion positively.

As regarding the last two conclusions, the findings of this research study indicate that relatively small groups are most likely to contain more than 10 members, but fewer than 30. The conclusion about large organizational groups refers to groups with more than 50, but fewer than 100 members. However, precise boundaries between group size categories cannot yet be defined based on the empirical findings. More (explorative) research is needed to refine the categories further and understand the differences between them.

As concerning the first three conclusions, we can argue that the research model (figure 1.2) has indeed proven to be a useful approach to studying cohesion in organizational groups. The relationships in the model are considered reciprocal, as put forward in the discussion of structuration-based theories in Chapter 4. In order to study the effects of ICT empirically, we simplified these relationships somewhat. We limited our focus to only one direction of each
relationship. Moreover, we were unable, partly for practical reasons, to include all aspects of each relationship. In terms of the arguments involving the structuration-based theories, the theoretical hypotheses, as well as the empirical findings of this research study are valuable – despite the simplifications we used. As discussed earlier, the introduction of ICT applications in organizations can indeed be expected to alter organizational structures and processes in a recognizable - and partly predictable - way. This is especially so, considering that the need to survive in a rapidly changing environment has driven organizations to tap into the potential capacity of ICT to: overcome time and space, connect (groups) of people and increase control. The research studies discussed in Chapter 4, as well as the results of Study 2, support this. Nonetheless, the speed of change and the organizational focus on these potential capacities may differ. It may take some time for new forms to become institutionalized. Moreover, it may not be ICT itself, but rather the interaction between ICT, organizational structures and social processes that should be considered the cause of these changes. The second conclusion incorporates this approach by attributing these effects to characteristics of ICT, which only have value if organizational processes and these potential ICT capacities are adapted to each other.

Discussion
As regarding the method of the empirical studies and the results underlying conclusions 4 to 6, several remarks are in order. The empirical part of this study reveals to some extent the mechanism of the development and maintenance of social cohesion in organizational groups and the impact of ICT use on that mechanism. Several aspects, however, such as personal and task characteristics, and the role of intergroup relations have only been discussed theoretically and were not explicitly addressed in the empirical study.

Personal characteristics, such as an individual’s need for belonging, perspective on groups and use of technology, can vary. As in Study 3, our sample here was large, presenting us with a variety of personalities. Consequently, this factor was considered on an implicit basis only. We gained no insight into how personal characteristics interact with technology use, and consequently influence an individual’s experience of social attraction towards his/her own - or other - groups in the organization. As regarding the possible influence of task characteristics, an individual’s task and role within an organization could conceivably influence that person’s perspective on his or her position within an organizational group. We did include the aspects of task characteristics related to interpersonal relations and attraction, such as communication activities and differences between functions in a group. In doing so, however, we took only implicit account of the influence of task characteristics. Once again, we gained no insight into the interaction between task characteristics and ICT use in itself. Both aspects are interesting subjects for future research. With regard to personal characteristics, it would also be interesting to examine individual experience with ICT applications, especially among the future working generations, who are now still in school. These generations are being raised, using ICT. For that reason, they are less “bothered” - if at all - by a history of using traditional media only. The social impact of ICT/CMC described in
this study may, therefore, have quite a different effect on them and their interaction within and between organizational groups.

The mechanism of intergroup relations (discussed in Chapter 3) may reinforce the hypothesized difference in the effects of ICT in smaller and larger groups. If people can use ICT to spread their communication patterns throughout the organization, they may become more open towards other groups. Based on the discussion of intergroup relations, we could argue that this openness could facilitate, or even stimulate, the development of cohesion on a following level of entity. In studying this mechanism, either in relation to ICT effects, or as a social process in itself, future research should also include the role of identification processes. As referred to in Chapter 9, a positive relationship can exist between identification on the group level and identification on the organizational level, contrary to the expected negative relationship (attributable to the strong relationship between identification and cohesion). For instance, individuals can perceive their work group as partly representative of their organization, which can result in a positive (or negative) attitude towards both entities. At the same time, individuals’ attitudes, or their personal attraction towards other groups in the organizational department that includes their work group, may still be negatively affected by the strength of ingroup attraction.

Another remark should be made here about the method used in the empirical study, this time with regard to the operationalization of ICT. Two measures of ICT use were included: the individual use of ICT applications in general (“ICT use in general”) and group use of CMC (“CMC within group”). The first variable referred to the assumed indirect effect of ICT use. It could be argued that the use of ICT on the organizational level should also have been included to explore the assumed indirect effect, including the organizational use of information systems, for instance Management Information Systems or forms of Enterprise Resource Planning (ERP). These kinds of applications require some adaptation of business processes, and can consequently trigger shifts in organizational structures (as also discussed in Study 1). However, since only four organizations were included, there was limited variation in ICT on the organizational level. For that reason, we measured ICT use in general on the individual level. Further research of effects of ICT use on social cohesion, or any other social concept, should also include studies comparing a larger number of different organizations, varying in their ICT use on the organizational level. That would serve to obtain more insight into the relationship between ICT and organizational structures and its (indirect) impact on social structures.

CMC was measured on the group level. Considering the earlier discussion of personal characteristics, it may also be interesting to study the effect of CMC on the individual level. Research in this area could include experiences and attitudes towards communication technologies, in relation to differences in personal needs for belonging, among other things.

The third study provided interesting information regarding the explorative part of our research, which focused on determining what could be considered relatively small and
relatively large groups. However, as mentioned earlier, more research is needed to fine-tune the size categories and further explore the turning point.

As already discussed in chapter 9, “relatively small groups” appear to represent a single category. In the smallest category (5-9 members), we found no effect. In the second category (10-14 members) the use of CMC was responsible for some variance in cohesion. In the third category (15-29 members), ICT use in general affected cohesion. The empirical results of this study do not offer insight into why these differences exist in smaller groups. Possibly, people in the smallest groups see each other anyway, for instance, because of close working relations. Another explanation could be that the smallest group category did not include teams whose members were all stationed at geographically different locations, a situation that precludes regular FTF communication.

The group size of the third size category may be large enough to benefit from CMC in the way larger groups are assumed to do. The turning point from a negative to a positive effect for CMC may lie somewhere close to this category. Based on the empirical data, this point can be assumed to be somewhere in the fourth category. However, this is a rather large category, and the direct and indirect effect may shift around at different size ranges within this category. The existence of more hierarchical layers within a group may also be of influence. Unfortunately, the empirical data does not provide any more information about this fourth category and the assumed turning point. Further exploration of this category in future research is crucial to increasing our understanding of the effects of ICT on social cohesion.

Finally, only one category of the large groups was included, leaving various questions, for instance, concerning possible differences between different large group categories or social cohesion at the (sub)organizational level. With regard to the latter, the relationship with organizational (sub)cultures becomes fairly relevant.

### 10.3 Some theoretical implications

The conclusions form an interesting basis for further theorizing the concept of social cohesion and empirical research in this field. Moreover, we can see some interesting links with other research topics in the field of social processes in organizations, such as social identification and social capital.

This dissertation devoted no attention to the desirable degree of cohesion with regard to such aspects as the performance or productivity of a team. Conceivably, this depends, among other things, on the task a group must perform, the work relations the group must maintain with other organizational units and the personal characteristics of group members. So far, research into the relationship between social cohesion and performance and/or productivity (in either organizational or other contexts) has resulted in contradictory findings, leaving this topic open for more research. The distinction between ingroup and outgroup attraction in our conceptual model of social cohesion in organizations can be an interesting approach to studying cohesion
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in relation to performance or productivity, taking account of the role of intergroup relations and the eventual need for some degree of openness towards a group’s environment.

Although several remarks were made in this dissertation regarding the reciprocity of the relationships presented in our research model, the emphasis in the empirical part of this study lay on examining only one direction of each relationship with regard to ICT use as a cause of several effects. It would be interesting to conduct a study into the reverse relationship, especially as concerning the question of how ICT can be used to influence social cohesion intentionally. The main conclusion of this research study concerns the fact that the use of ICT applications can affect social cohesion, either negatively or positively. Organizational members, however, make choices in their use of ICT applications, choices that may be influenced by their social relationships. It is conceivable that people who are fairly attracted to their own small group(s) are more willing to invest time in their relationships with group members, for instance, by face-to-face communication. Secondly, people in larger groups may – due to the attraction they experience towards their group - be eager to use ICT applications because they facilitate interaction on a larger scale. In summary, cohesive groups may, in principle, differ in their use of ICT applications from less cohesive groups. And that, in turn, could interfere with the effects of ICT use on social cohesion as found in this research study.

Today, the social identification process is frequently discussed in organizational literature. This is mostly because of its relationship to other social concepts, such as commitment (Ashforth & Meal, 1989; Cheney 1983), loyalty (Elsbach, 1999), satisfaction (Meal & Tetrick, 1992) and social cohesion, and thus because of its importance to organizations. Given the overlap in antecedents of identification and social cohesion, and the special role of identification in our model as a condition necessary for cohesion to develop, the hypotheses and conclusions of this research study may, to some extent, also apply to identification processes. In one study comparable to our research (mentioned in Chapter 9), a difference was hypothesized between the effects of ICT use on smaller and larger scales (Simons et al. 2003). And indeed, a positive effect was found for ICT use on identification with the organization, though no effect was found on the group level. Another interesting finding in this study was that ICT use also proved to have an accelerating effect on organizational identification. Apparently, ICT makes it easier for new employees to get to know an organization, resulting in a higher degree of identification within a shorter period of time. Linking this finding to social cohesion, it is interesting to examine whether this also applies to the development of ingroup attraction among new employees.

A different approach to studying the effects of ICT on identification processes is offered by the Social Identification model of Deindividuation Effects (Reicher, Spears & Postmes, 1995; Spears & Lea, 1994). This model argues that social cues facilitate the individuation of communication patterns, while the lack of social cues causes people to attribute group characteristics to individuals. From this perspective, it can be argued that ICT (CMC) use can reinforce the social identity of a group. It would be interesting to examine the
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tenability of this model at different levels (smaller and larger scale) of entities in organizations. Based on the results of this dissertation, we could assume that this model is more suitable for larger than smaller organizational groups.

It also interesting to explore to what extent the conclusions of this dissertation can be applied to the relationship between ICT use and social capital, the latter being an important outcome of social cohesion. In organizational literature, we can see a growing interest in studies regarding social capital (i.e. Adler & Kwon, 2002; Boer, Van Baalen & Kumar, 2002; Osterloh & Frey, 2000; Van Den Hooff, De Ridder & Aukema, 2003). Chapter 2 presents an elaborate discussion of this concept and its value to organizations. Benefits that are assigned to social capital include easy access to information and resources, cooperation and collective action, knowledge sharing, etc. As regarding the potential capacities of ICT, these processes can be instrumentally facilitated by ICT, offering a means to support information exchange, workflow management, document sharing, etc. At the same time, ICT offers the capacity to cope with the costs of social capital, such as a limited flexibility to renew network compositions. The indirect effects of ICT use on social cohesion include the capacity to break down boundaries and open new communication patterns, as well as the potential to contribute to more flexibility in social networks. Moreover, outgroup attraction or “openness” in smaller groups towards other parts of the organization, which can be triggered by the use of ICT, may also influence this flexibility positively.

In examining the relationship between ICT use and social concepts other than social cohesion, we should also consider the reciprocity of the relationship. An organization rich in social capital may use ICT applications differently. This “richness” may, for instance, motivate people to use any means available - including ICT/CMC applications - to share their knowledge. Employees who identify little, if at all, with their work group will be less tempted to seek much contact with their co-workers, either using CMC or more traditional communication media.

10.4 Some practical implications

The results of our research emphasize the importance of studying second-level effects of new technologies in organizations. As argued in the first chapter, an organization can be seen as a social entity, comprising (groups of) people who form its building stones. If the “stones” are rearranged because of the introduction of new technologies that enable improvements in current work processes, some understanding of the social impact of that rearrangement could prove crucial to the effectiveness of those new technologies. Moreover, an organization should anticipate the social impact of replacements by or the addition of new communication media on interaction patterns between its employees.
ICT has proven to be a threat to - as well as an opportunity for - the social well-being of individual employees, and thus the organizations they work for. As argued in Chapter 2, cohesion is an important generator of social capital, comprising trust and organizational citizen behavior. A restraining effect on attraction towards one's direct colleagues can somehow cause people to become "lost" in or even uncaring towards their work environment. That, in turn, may result in antisocial and more individually oriented behavior. Commitment may be directed more towards personal goals than those of the group. At the same time, people can become more easily attracted towards larger segments of the organization, or even the organization itself. This may be accompanied by (organizational citizenship) behavior in favor of (larger parts of) the organization, instead of a drive to "defend" the interests of one's own work group, which does not always benefit the organization as a whole.

An understanding of the difference between effects on the smaller and larger scale enables organizations to cope with this social impact. For instance, if ICT can provide employees with the means to access and understand "the bigger picture" of (a large segment of) an organization, feelings of loss or indifference can be diminished. Secondly, a decrease in attraction towards one's own work group can create more "openness" towards other parts of the organization, which in turn, may stimulate cooperative behavior and open communication processes throughout the organization. This may contribute to the effectiveness of an organization and facilitate work processes that extend across intra-organizational boundaries.

Knowledge of the factors (antecedents) important to developing and maintaining cohesion allows an organization to use and manipulate circumstances to either increase ingroup attraction, or to stimulate openness (outgroup attraction). This research study has shown how ICT use can affect cohesion unintentionally (as a second-level effect of ICT). The findings thus provide a basis for research into how these effects can be created intentionally - using ICT applications - in a way desired by an organization.

With regard to the social "threat" and/or social "potential" of ICT use, an organization may, for instance, choose to form fairly small teams (<10) in order to minimize negative effects, and provide those teams with the technical means to access and manage the organization as a whole. In larger small groups, FTF communication should be encouraged between employees by organizing formal or informal meetings. Since the lack of non-verbal cues in CMC is largely responsible for the restraining effect on cohesion, efforts could also be made to "enrich" forms of CMC, for instance, by the use of videoconferencing. This applies to groups whose geographical distribution does not always allow FTF. Increasing employees' competence for using CMC may also help. Finally, creating small-scale and large-scale virtual working environments using an intranet could serve to make the individual's direct working environment more recognizable within the overall organization.

These examples can be seen as concrete illustrations of how the conclusions of this research study can be applied in organizations. How an organization should anticipate the social effects
of ICT will depend on the tasks it must perform and the goals it is striving to accomplish. Failure, however, to take account of the social or second-level effects of ICT may undermine the originally intended effects, such as that of improving the organization's effectiveness and efficiency.