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A MODEL OF NORM DEVELOPMENT FOR COMPUTER-MEDIATED TEAMWORK

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The process of establishing norms is an important aspect of group dynamics. Most, if not all, of the major models of group development incorporate norming as an important part of the process. However, little is understood and agreed on regarding how norms develop. With the increased availability and power of technology to connect people at remote sites, the popularity of computer-mediated teamwork has increased dramatically. This new communication context brings with it some dramatic differences from the traditional face-to-face context, along with a need to understand how norms develop in this environment. This study investigates the norming process engaged in by 10 computer-mediated learning teams. The study describes how group norms evolve from a general to an operationalized state. Based on the findings of the research, a model describing the process of norm development in computer-mediated teams is presented. In addition, a model is presented to describe how individual perceptions of norm boundaries are modified as the group norms become more operationalized.

Keywords: *small group norms; computer-mediated learning teams; group dynamics*

The establishment of norms is an important aspect of most, if not all, major group development models (Mennecke, Hoffer, & Wynne, 1992). However, our understanding of what small group norms are and how they emerge is limited. The past decade has ushered in an era in which the availability and power of communication technologies has made "virtual" or computer-mediated teams not only possible but sometimes preferred. Developing group norms is an important factor in facilitating productive group interactions both in face-to-face and computer-mediated teams (Graham,

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2002a). The research study outlined in this article seeks to establish a preliminary model of norm development that describes how norms emerge and evolve in small groups. The research has implications for facilitating the norming process for small groups and thus potentially helping them to avoid major conflicts and become productive more rapidly.

BACKGROUND

Groups whose members are geographically dispersed and use technology as a primary means of communication are often referred to as computer-mediated, on-line, or virtual groups. Research related to work in an on-line environment typically falls under the label of computer-mediated communication (CMC). Research in the CMC literature has generally focused on *work* groups instead of *learning* groups. There has been very little research done to directly look at the development of norms in on-line groups. In fact, at least two prominent researchers have identified this gap in our knowledge base and called for research to address it (Furst, Blackburn, & Rosen, 1999; Jarvenpaa & Knoll, 1998). The focus of this research is to understand the process of norm development for on-line learning groups.

Researchers have used dozens of definitions to describe norms. Some of the most common terms or phrases used in the different definitions of norms are described in Table 1.

The most notable difference in the definitions of norms is between those that prescribe and those that describe behavior. The first three terms/phrases listed in Table 1 prescribe behavior, whereas the last phrase describes behavior. This research will be discussed using the following definition of norms: Norms are shared expectations that constrain and drive the action of group members.

This definition was chosen because it emphasizes the prescriptive nature of norms in influencing behavior in addition to allowing

TABLE 1: Some Common Terms Found in the Definitions of Norms

Term/Phrase	*Description*
Oughtness	Perhaps the most common term used to describe norms is oughtness (Hechter & Opp, 2001). Oughtness is a term intended to express a sense of collective obligation (DeRidder, Schruijer, & Tripathi, 1992) or shared expectations (Hechter & Opp, 2001) by the members of a group.
Shared frames of reference	Sherif (1936) described norms as perceptual and cognitive frameworks shared by members of a group or community. In this definition, norms serve as collective frames of reference that allow members of a community or group to interpret situations and make decisions in the face of uncertainty (Fine, 2001; Sherif, 1936).
Rules of conduct	Rules that regulate or guide behavior is another way that norms are commonly defined. It is important to note that when the term rule is invoked related to norms, there is usually an implicit assumption that some kind of social sanctions exist to enforce the rule (e.g., taking off one's hat because it is hot vs. When entering a church) (Horne, 2001).
Uniformity of group behavior	The concept of norms here is descriptive instead of prescriptive. In this sense, norms do not promote action but rather are descriptive of the statistical regularity of certain behaviors (Forsyth, 1999).

for both explicit norms in the form of rules and more implicit norms as represented by a sense of "oughtness."

METHOD

The model of norm development presented in the Findings section of this article was based on the findings of a research study that investigated norming in 10 project teams in the first course in a distance master's degree program in instructional systems technology at Indiana University. This section of the article briefly describes the context of the study and the data collection and analyzes procedures used in the research (for greater detail, see Graham, 2002b).

CONTEXT

The context for the study was an introductory course in instructional design offered to a cohort of students in the distance master's degree program in instructional systems technology at Indiana University. The distance course was modeled after the on-campus course and therefore engaged students in collaborative team projects. Students participated in two projects during the semester, each on a different team. The instructor assigned membership in the Project 1 and Project 2 teams. Each of the five Project 1 teams and the five Project 2 teams had 3 to 4 team members, with no overlap in team members from one project to the next. Each of the project teams represented a separate case in the research study. Project teams were introduced to an online discussion tool called SiteScape Forum, where each team had a private team space for communicating via synchronous chats, asynchronous discussions, posting documents, and so forth.

The research involved the participation of 17 students as well as 2 instructors and 3 teaching assistants. There was a good gender balance in the course, with 9 female students and 8 male students. The students also came with a mix of career backgrounds and goals. The majority (11) of the students were working as teachers in the public school system. A few (5) of the students were working in the corporate sector, and 1 student was in the military. Although all of the students were highly motivated to succeed, only 2 had any previous experience with computer-mediated teamwork.

All of the students participated in a 4-day, face-to-face orientation on campus at the university, which included the following activities:

- Introductions to faculty and students
- Social events, group meals, cookouts, and the like
- Logistics such as establishing computer accounts, getting ID cards, buying books
- Training and practice with communication technologies and paperless editing tools
- Instruction introducing the field of instructional technology
- Instruction and activities regarding group processes

The concept of establishing a formalized process for creating group norms was presented to the students in the afternoon of the final day of the orientation during the instruction on group processes. Based on Tuckman's (1965; Tuckman & Jensen, 1977) model of group development (including stages of forming, storming, norming, performing, and adjourning), the instructor emphasized the importance of each team beginning their work by discussing and agreeing on a set of group norms or "code of conduct." Some general examples of norms were provided, and the students were divided into small temporary groups and given 10 minutes to develop a list of norms that they could share with the class. After the allotted time, each team was given a minute to have a representative share with the class the chosen list of norms. The instructor said she would post the lists to the class discussion board, and she encouraged the Project 1 teams to refer to these norms in establishing their own set of norms to guide their team efforts.

DATA COLLECTION

Data collection was accomplished using methods of observation, interviews, and document analysis. Table 2 summarizes the data collected for the 10 team cases investigated as part of this research.

OBSERVATION

Observations took place during a 4-day, face-to-face orientation, with the researcher taking field notes. A videotaped archive was made of the portion of the orientation during which Tuckman's (1965; Tuckman & Jensen, 1977) model of group development was introduced and the importance of the norming stage in that process was emphasized. Observation was also conducted at periodic meetings with the instructors and teaching assistants, where progress of the teams was discussed.

TABLE 2: Summary of Data Collected for This Study

Method		*Details*
Observation	Orientation activities	4 days long
	Instructor/facilitator meetings	4 meetings (approx. 30-60 min each)
Interviews	Instructor/facilitator interviews	5 interviews (approx. 20-40 min each)
	Team member interviews	16 interviews (approx. 30-75 min each)
Document analysis	Asynchronous discussion forum communications	Discussion forums for each of 10 teams and one for the whole class discussions (each ranging from about 30 to 160 pages)
	Synchronous chat meeting transcripts	Approx. 130 chat meeting transcripts (ranging from 1 to 20 pages each)
	Team progress reports	Approx. 4 for each of the 16 students
	Peer evaluation reports	Approx. 2 for each of the 16 students
	Group dynamics reflection papers	Approx. 7 for each of the 16 students

INTERVIEWS

Semistructured interviews were conducted with the students as well as with the instructors and teaching assistants, focusing on group dynamics and particularly what norms developed in the teams and how they developed. A few of the seed questions used in the team member interviews are listed below.

- What norms or rules did your team develop? (These can be explicit or unspoken norms.)
- How did your team go about developing the norms? Was this different from your first project? How?
- What kinds of communication strategies did your team use? (E-mail communication?) How did your team decide to use those strategies? How much of your time was working individually versus working/communicating as a team?
- How did your team divide up the work among the members? How did your team decide how to divide up the work?
- Can you share any examples of conflict that your team members experienced? How was the conflict resolved?

For a more comprehensive list of interview questions and protocols, see Graham (2002b).

DOCUMENT ANALYSIS

The majority of team interactions were captured and archived on-line through the discussion board, SiteScape Forum. In addition, students submitted peer evaluation reports at the end of each project, and two team progress reports were completed during each of the two course projects. Finally, throughout the semester, students submitted a series of reflection papers discussing different aspects of their group interactions. All of these documents were available to the researchers for data analysis.

DATA ANALYSIS

Data were analyzed using an iterative process in which emergent themes and relationships between the themes were identified, coded, and refined. Software from Qualitative Solutions and Research International (QSR) enabled the researcher to compare and refine codings across the large data set. Models were progressively developed to visually represent the relationships identified in the analysis (Goetz & LeCompte, 1984). Details regarding the implemented stages of this "intensive analysis" (Merriam, 1988) can be found in Graham (2002b). To establish trustworthiness of the analysis, the researcher used (a) triangulation of sources and methods (Patton, 1990), (b) formal and informal peer debriefing to review codes and interpretations (Lincoln & Guba, 1985), and (c) the member checking the findings with the study participants (Lincoln & Guba, 1985, p. 283).

FINDINGS

The research study enabled the creation of a primitive model outlining the process of norm development. As described in this

article, the model addresses both the norming process occurring at a group level and individual perceptions of group norms.

THE EARLY MODEL

The researcher learned early that "norms evolve." In the cases in this study, the group norms tended to evolve from a general state with fuzzy boundaries to a more operationalized state with clearly defined boundaries. Figure 1 depicts the early model that the researcher created to capture this concept.

GENERAL NORMS

General norms tended to reflect high-level expectations regarding values that should be shared among team members. Following are a few examples of general norms articulated by different teams:

- Communicate frequently
- Pull your weight
- Limit task time (i.e., be efficient)
- Offer and accept constructive criticism

The expectations expressed in these norms did not have clear or specific boundaries. The boundaries were fuzzy because they could be (and often were) interpreted to mean different things. For example, to one team member, "communicate frequently" might mean keeping in contact with the team weekly, whereas to another team member "frequently" might represent daily contact. The assumption among team members was that they had a common understanding of the boundaries of general norms. However, because the norm boundaries were not explicit, individuals had different perceptions of them. Figure 2 shows a simple model of what happens at an individual perception level with the general or fuzzy norms. For simplicity, this depiction shows only 2 team members. The ovals in the figure represent the norm boundaries as perceived by the 2 team members. Three different behaviors related to the group

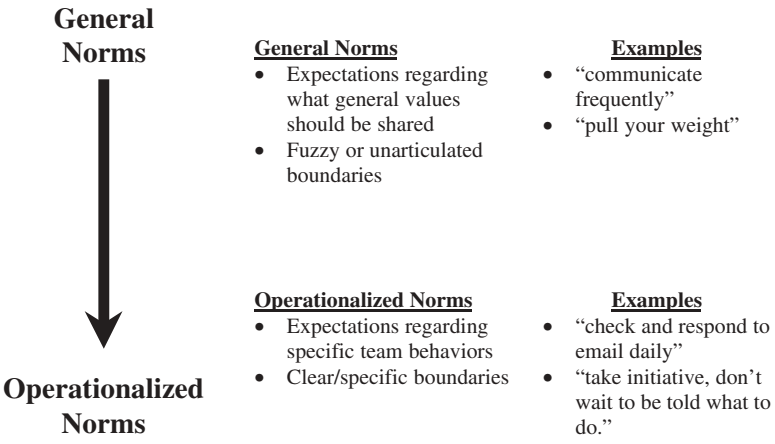

Figure 1: Model Depicting the Tendency of Norms to Evolve From General to Operationalized

norm are labeled in the figure. Behaviors within an oval conform to the individual's understanding of the norm, whereas behaviors outside of the oval are in violation of the individual's understanding of the norm. Of the three behaviors identified, Behavior B is the most likely to cause tension and conflict in the team because it conforms with the perception of the norm held by one team member and violates that held by the other.

Table 3 shows examples of how two general norms, "communicate frequently" and "pull your weight," were perceived differently by team members.

The norm "communicate frequently" (Table 3, example 1), was ambiguous as it did not articulate what was meant by "frequently." Team members had different perceptions and expectations for this general norm. Frequently could mean to check e-mail daily, every other day, or weekly; it might include responding to or merely acknowledging receipt of e-mail from other team members. Similarly, although most team members interpreted "pull your weight" (Table 3, example 2) to mean all team members should share equally in completing the tasks required for the project, one team member did not feel the norm included being equally involved in

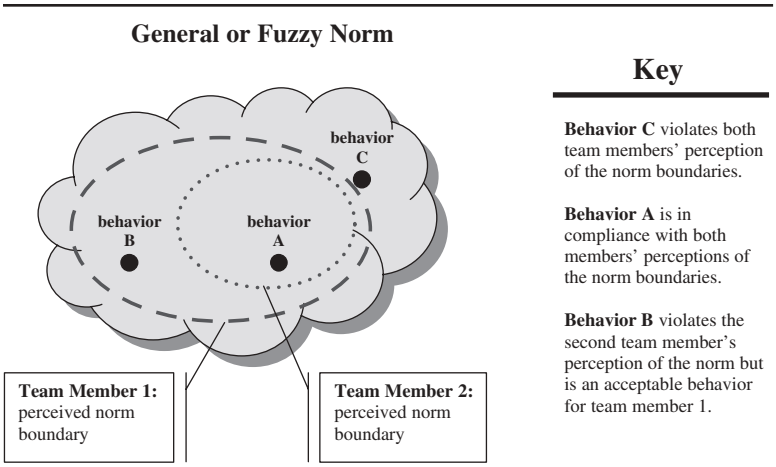

Figure 2: Depiction of Fuzzy Norm Boundaries

TABLE 3: Example of Differences in Perceptions of Norm Boundaries

	Example 1	*Example 2*
General norm	Communicate frequently.	Pull your weight.
Team member 1: Perception of norm boundary	Read and respond to e-mail daily.	Entails doing an equal portion of the project work.
Team member 2: Perception of norm boundary	Check e-mail daily (not necessarily respond to) or read and respond to e-mail once or twice a week.	Includes doing an equal portion of the project work and being equally involved in the project decision making.

the leadership and decision-making efforts of the team. This perception led him to expect others to make decisions and tell him what to do. This difference in understanding of norm boundaries led to tension in the team and feelings that the team member was not pulling his own weight.

The general norms were perceived by many of the students to be intuitive and thus not valuable. One student made the following comment:

Greg: Well, the first ones [project norms], like I said earlier, was kind of a carryover from orientation, and they were basically just sort of best practices kind of thing on how we were gonna communicate and work as a team. So I can't remember all of them, but they had a lot to do with, you know, being considerate of people's opinions, being on time, being responsible, that kind of thing.

Interviewer: Were those useful at all?

Greg: Um, they were useful, I think, but to me personally they were pretty intuitive things like, you know, don't be overly critical of other people, and, you know, try to be a good teammate—things like that. They are useful, but I didn't personally feel like it was something that [you] necessarily have to tell most people.

Despite the potential ambiguity inherent in the general norms, some of the students expressed in the interviews that they felt these norms were useful. The researcher observed that articulating general norms allowed team members to build a sense of team unity and solidarity. Rarely, if ever, in the teams were the general norms debated. The typical scenario was for 1 team member to propose an initial list of norms that would then be consecutively seconded and added to or elaborated on by the other group members, thus establishing common standards or values that all could easily agree to.

OPERATIONALIZED NORMS

Norms that have clearly defined boundaries are referred to as "operationalized" norms because the underlying behaviors are more specifically designated. The following are operationalized norms established by the teams:

- Team members should check e-mail twice daily, a.m. and p.m.
- Take initiative; don't wait to be told what to do.
- Keep team meetings to 1 hour.
- Provide constructive feedback using comments rather than editing the team members' work.

The lack of ambiguity regarding the expected behavior in the operationalized norms made the norms more useful to the teams.

As Figure 1 shows, the teams' norms tended to become more operationalized as time progressed. This trend occurred not only within teams but also between Project 1 and Project 2 teams. Four of the five Project 1 teams (80%) formally established general norms, although only two of the five Project 2 teams (40%) did so. However, two additional teams in Project 2 began their teamwork by informally establishing expectations as they talked about lessons learned from their Project 1 experience. The initial norms established in Project 2 were at a more operational level than the norms established early on in Project 1. A team's ability to establish operationalized norms was affected by the prior experience of the team members. At the beginning of Project 1, 9 of the 17 class members had absolutely no prior experience with on-line courses or on-line teamwork, and the majority of other team members characterized their prior experience as ranging from *some* to *very little*. By the time Project 2 teams were formed, all had experienced a half semester participating in an on-line team and thus were more experienced in articulating specific boundaries for the team norms.

THE CYCLE OF NORM DEVELOPMENT

Once the researcher understood that the team norms tended to become increasingly more operationalized, he investigated the nature of that progression. Figure 3 shows a cyclical model that includes elements observed in the norming process, and Table 4 provides a summary description of each element in the model. The remainder of this section of the article describes in detail each element in the cyclical norming process. All of the elements in this general model were not present in every case. For example, in many instances in which norms were observed, there was little to no discussion of norm boundaries because a strong team leader would suggest a norm and the other team members would show their acceptance by simply complying.

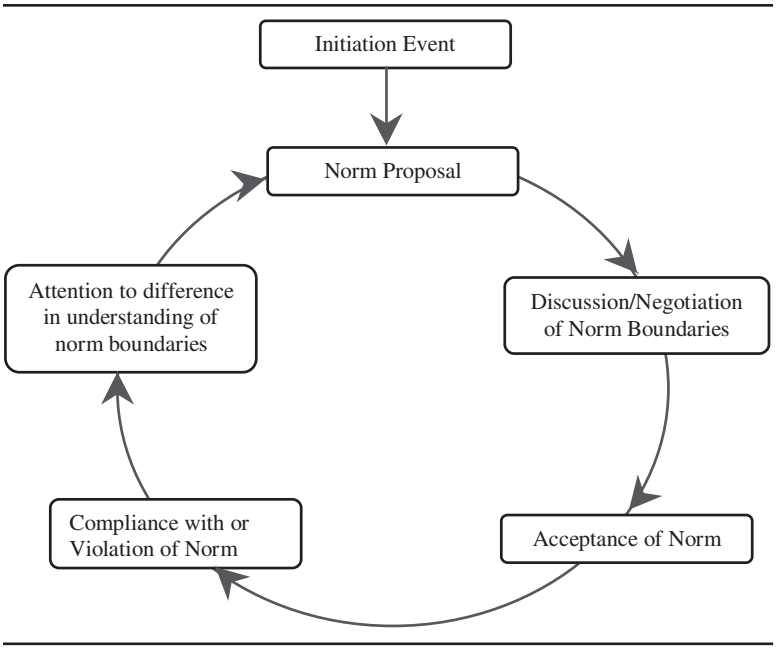

Figure 3: Cycle of Norm Development

CYCLE ELEMENT: INITIATION EVENT

In general, norms were proposed in response to a direct need felt by the group as a whole or by an individual member of the group typically because of an event in the group that revealed the need. Four general initiation events established the impetus for the development of a norm. In addition, the formal process of talking about common expectations at the beginning of a team can be thought of as a fifth initiation event. Thus, five types of initiator events were identified.

- A past experience
- An individual need
- A team conflict
- A traumatic event
- A formal norming activity for a new team

TABLE 4: Description of Elements in the Cycle of Norm Development

Process Stage	*Description*
Initiation event	The process begins with the initiation event, which is the event or set of events that establishes a need for the norm.
Norm proposal	The norm proposal is when a norm is explicitly or implicitly presented to the group for consideration.
Discussion/negotiation of norm boundaries	After a norm has been proposed, the group will consider the norm by discussing/elaborating on what the boundaries of the norm should be.
Acceptance of norm	When team members are in agreement with a proposed norm, they can accept the norm verbally or they may show acceptance for the norm by complying with it.
Compliance with or violation of norm	After the norm has been accepted by team members, the norm is strengthened or weakened through compliance and violation of the norm. Violation without sanctioning will weaken the effect of the group norm.
Attention to differences in understanding of norm boundaries	As the team enacts the norm, the nuances regarding each team member's perception of the norm boundaries will become apparent. If unchecked, this may lead to conflict.

Each of these five types of initiators to the norm development process will be discussed in more detail in this section.

Past Experiences

The most prevalent influence on new team norms was the past experiences of the team members, whether successful or unsuccessful. Two brief vignettes illustrate how the most impactful and salient of these past experiences often served as the driving force behind proposing a new team norm.

Vignette: Using MSN Instant Messenger

Dena's Project 1 team had experimented with the use of MSN Instant Messenger (IM), a tool allowing the team members to communicate in real time with each other and to see when other team members were simultaneously on-line. Dena fell in love with the immediacy and visibility that the tool added to the team's ability to communicate. At the beginning of Project 2, she proposed to her team that they use MSN IM instead of the discussion tool provided by the university. Team members resisted because of the additional

effort required to download and try the new software as well as concern that the tool was not supported by the school. Dena persisted during the first week and a half of the project. She explained how easy it was to install the tool, addressed concerns that were raised by her teammates, and described the benefits it had brought to her Project 1 team. During their third team meeting, she asked, "Should we meet in IM next time? It seems a little more efficient to me . . . or does anyone object?" The team finally acquiesced and began using MSN IM as their primary source of synchronous communication from that point on.

Dena's positive experience with MSN IM led to her initiation of the expectation that her Project 2 team would use the tool to communicate. This technology-related norm was eventually adopted by the team, and the postcourse interviews revealed that all of the team members felt like the move to MSN IM had positive effects on the team communication.

Vignette: Creating a Feelings Forum

During Project 1, Tess initiated the use of a discussion area that her team called the Feelings Forum, a private space where the 4 team members could openly discuss their feelings about their team meetings and other team interactions. This forum helped establish a norm of openness about feelings among team members, which all felt helped their team to be cohesive and work well together. In fact, 2 of the 4 team members created similar forums in their Project 2 teams, and a third team member commented that she thought about setting up a Feelings Forum in her second group but ultimately didn't because it "just didn't seem to fit the group."

This vignette highlights how a positive prior team experience led team members to initiate the establishment of a similar norm in their Project 2 teams.

Trauma

In some cases, a traumatic event caused the team members to feel a certain level of discomfort, recognizing that they needed to establish expectations to circumvent the same experience in the future. Two vignettes are presented as examples.

Vignette: The Unattended Team Meeting

Team 1A got off to a quick start on its project. A couple of days after the Project 1 teams were announced, the team had already discussed some team norms and brainstormed ideas for the topic of its project asynchronously. The team decided that the project ideas should be finalized in a synchronous team meeting. It tried unsuccessfully to convene a team meeting, failing several times. One team member, Lara, showed up for the team meeting five different times on 3 different days. The causes were traced to various levels of poor communication, including miscommunicating the meeting time as well as team members failing to acknowledge whether they would attend at the proposed times. This traumatic experience was very frustrating, particularly to Lara, who subsequently demanded that the team consider some operational guidelines that would help avoid the same problems in the future.

The trauma caused by miscommunicating and having several failed team meetings showed the need for clearer team expectations regarding communication and team meetings. The following team norms were subsequently established:

- Team members should check e-mail twice a day, a.m. and p.m.
- Team members must make phone numbers available so that they can be contacted in an emergency.
- Team members should acknowledge that they have seen a meeting proposal and indicate that they will be attending a meeting.
- The team should use a.m. and p.m. with the appropriate time zone rather than military time.

Vignette: Thinking Aloud on the Asynchronous Discussion Forum

Team 2B had its first team meeting approximately 1 week after its Project 2 team had been formed. The team meeting was quite productive. The 3 team members decided on a topic for their project and divided the tasks required to complete the analysis phase of the project. Jane, one of the team members, created a space in the discussion forum where the team could begin discussing issues related to each team member's tasks. Over the next several days, Jane used the forum as a place to brainstorm and "think out loud" regarding the project analysis document. This way of using the forum was overwhelming to the other 2 team members, Larry and Valerie. From the

time of Jane's initial post to the afternoon 4 days later, Jane had posted 13 additional times, compared to Larry's 2 postings and Valerie's 1 posting. Also, although Larry and Valerie both kept their postings to less than 100 words, Jane's postings ranged from 34 to 799 words, with the average posting length being 229 words. After a couple of days, Larry posted a note to Jane expressing that he was overwhelmed by the "thinking out loud" in the forum and suggested that this practice be disbanded in favor of a more moderate use of the forum. Valerie quickly seconded Larry's suggestion, and the team established new shared expectations regarding thinking aloud in the forum.

This vignette describes a traumatic event that paralyzed team members from participating in the team discussion forum and the team's initiation of a team norm to address the problem.

Conflict

Team conflict can also initiate the norming process. Often, conflict that surfaced was due to a difference in the expectations of team members causing a perceived norm violation. The vignette below is an example of conflict initiating the norming process.

Vignette: Providing Constructive Feedback

Not long after beginning Project 2, Team 2D divided its work into three distinct parts, and each team member took primary responsibility for the initial draft of one of the parts. The understanding was that the team members would each post their drafts to be reviewed by the other team members, but the team did not establish any expectations regarding how feedback would be provided. This vagueness ended up causing a major conflict between 2 team members, Tracy and Ann. Tracy provided feedback by actually revising the documents using MS Word's track changes feature. She assumed group ownership of the drafts and expected the teammates to review her feedback and accept or reject the changes that she had made. Ann, on the other hand, assumed more individual ownership of the drafts and expected team members to make suggestions for changes, allowing the team member who owned the draft to be responsible for actually making changes. These differences in expectations finally peaked when Tracy made extensive changes to a later draft written by Ann. Ann commented on the discussion

> forum, "Wow, I don't know what to say. Nearly everything I contributed was erased and replaced. I hadn't realized my section was so poor. . . . Anyway, if you want to keep it like you have it, that's fine by me. Just let me know if you need me to do anything else." This conflict prompted the team to work toward a shared understanding of how team members would provide feedback to each other.

In this incident, the team members were providing feedback to each other in the way each felt was appropriate. However, their different expectations caused conflict within the team. Conflict can provide the incentive to propose and begin discussing norms in a group. In this particular case, a norm was never formally proposed and discussed, but the expectations of one team member were forcefully shared, which had an impact on how the team approached providing feedback in the future.

Individual Need

Individuals may feel a particular need for a team norm due to a specific past experience, a traumatic event, or a conflict. However, the individual's need may not be tied directly to a specific, identifiable experience. For example, in the "Creating a Feeling Forum" vignette, Tess felt an individual need to understand the other team members' feelings about the process at the beginning of Project 1. This need prompted her to establish the Feelings Forum, which was successful and subsequently promoted in Project 2 by team members. Similarly, during the "Using MSN Instant Messenger" vignette, in Project 1 Dena felt a need for immediate feedback and a sense of connectedness with the other team members, which caused her to experiment with the use of MSN Instant Messenger, which she later promoted in her Project 2 team as well.

Formal Norming Activity for a New Team

The formation of a new team or beginning of a new project is a time when group members have a need to figure out how they are going to operate and interact with each other. Teams in the study were encouraged by the instructor to take time out soon after the

teams were formed to formally discuss and establish team norms. The formal norming process may be initiated by trying to anticipate needs that the team will have and account for them by developing appropriate team norms.

CYCLE ELEMENT: NORM PROPOSAL

Once the need for a norm has been felt by one or more members of a group, the norm is proposed or presented to the group. The norm proposal, either implicit or explicit, is a way for the group to communicate how to address the identified need.

Explicit Proposals

Explicit norm proposals include those that are directly or formally presented to the group as norms or rules that the group should live by. They also include less formal invitations or suggestions that directly propose group adherence to particular behaviors. Understandably, formal norm proposals most commonly occurred in the formal norming process, with the expectation of some formal agreement and acceptance or disagreement and rejection. Less formal proposals were often observed in the study, with a norm being suggested to the group without expectation of formal acceptance or rejection of the suggestion. The explicit norm proposals were often articulated as something that "should" or "ought" to be done or as an invitation like "Will we?" or "Can we?" Two examples of explicit norm proposals follow:

- *Example 1:* "We all need to get in the habit of signifying yes, no, or undecided pretty quickly (which should speed up our chats)."
- *Example 2:* "Can we stick a.m. and p.m. after all of our times [instead of military time]?"

Implicit Proposals

Implicit norm proposals are not explicitly articulated as norms or invitations that should be accepted by the group. Implicit propos-

als are made in two primary ways: embedded in the meaning or intent behind verbalized statements (see Example 1) or embedded in the meaning or intent behind behaviors that are never explicitly verbalized (see Example 2).

> *Example 1:* "I learned from the first project that it's important to plan ahead and be in constant communication with team members! It's also important to be super supportive and keep a positive attitude." In this case, talking about the successful norms of the past team and lessons learned was an indirect way to propose some norms that were important to the team member.
>
> *Example 2:* A norm of assigning tasks via individuals volunteering for them was established in many teams. This expectation was not proposed explicitly but was presented more implicitly the first time that tasks needed to be divided up and individuals started volunteering to do different parts.

CYCLE ELEMENT: DISCUSSION/NEGOTIATION OF NORM BOUNDARIES

Discussion and negotiation of the norm boundaries is what helps the team members to better formulate an idea of what behaviors are acceptable or unacceptable for group interactions. This elaboration of norm boundaries is important in developing more specific or operationalized norms from general norms. The researcher expected to see much more discussion of norm boundaries than actually occurred in the teams.

CYCLE ELEMENT: ACCEPTANCE OF NORM

A proposed norm can be accepted by team members explicitly or implicitly. *Explicit acceptance of norms* occurs when team members articulate their agreement with or acceptance of a group norm: for example, "I agree with you that things that take more thought should be put in the forum [as opposed to being sent by e-mail]." *Implicit acceptance of norms* occurs when group members accept a proposed norm by complying with it but do not formally articulate their agreement. For example, in the "Using MSN Instant Messenger" vignette, the proposal that the team use MSN Instant Messen-

ger as their synchronous communication tool was opposed for a little while, but eventually the team members got MSN accounts and began using the tool. Their acceptance of the norm was not articulated verbally but was demonstrated through their actions. The formal norming process advocated by the instructor encouraged explicit acceptance of norms, but the naturally occurring norming process often resulted in implicit agreement.

CYCLE ELEMENT: COMPLIANCE WITH OR VIOLATION OF NORM

During this stage of the cycle, the norm is either strengthened or weakened. It is strengthened and reinforced if there is compliance with it. A violation of the norm can either strengthen or weaken it, depending on the team's reaction to the violation. Sanctioning a norm violator can strengthen the norm by emphasizing that the norm exists and will be enforced. When the violation is not sanctioned, the norm is weakened because there is not evidence that the norm actually exists outside of being proposed. None of the teams in the study developed any formal sanctioning mechanisms, but the desire to have good team relationships and to perform well provided some incentive to comply with the norms. So it was rare for team members to purposefully violate established norms. In rare cases, team members tended to sanction themselves. For example, after leaving town for the weekend without informing the team that he would be gone, the team member apologized.

> I was thinking about it, and I just realized that I broke a rule. I want to apologize for not telling the two of you I was going out of town. I was just imagining how frustrating it must have been waiting through Saturday and Sunday with no answer from me. It will not happen again.

CYCLE ELEMENT: ATTENTION TO DIFFERENCE IN UNDERSTANDING OF NORM BOUNDARIES

Norm violations tended to be unintentional rather than intentional, resulting from a misalignment in individual team members' perceptions of the norm boundaries (as depicted in Figure 2). One

team member would act in compliance with his or her understanding of the norm but actually violate other team members' interpretations. Violation of the perceived boundaries of the norm would cause tension or even conflict within the group, drawing attention to differences in team members' understandings of the norm boundaries. If dealt with properly, the differences could be resolved through another cycle of the process, refining the norm boundaries and reestablishing the norms.

A MODEL OF NORM DEVELOPMENT

Figure 4 combines the early model showing evolution from general norms to operationalized norms (see Figure 1) with the cycle of norm development (see Figure 3) into one model of norm development. Each circle in Figure 4 represents one iteration of the process depicted in Figure 3. Through this process, norms that begin as general norms will ultimately be refined in a way that makes them more specific and operational for the group using the norm to guide their interactions. Through this process, a general (fuzzy) norm may also become a series of norms with boundaries that are much more clearly defined.

Figure 5 shows a scenario depicting what is happening at the individual norm perception level during the norming process as three group members agree on a general norm for the team. However, because the boundaries of the norm are fuzzy, each member of the team has a different perception of what behaviors are acceptable. As long as the team's behaviors are similar to Behavior A, there are no problems.

At some point, a team member engages in Behavior C, which seems appropriate to him but violates the other two team members' perception of the norm. This event pushes the team into another cycle. The team revisits the norm and more clearly defines the norm boundary to exclude Behavior C.

The team continues to function until a team member engages in Behavior B, which seems appropriate to her but not to the other team members. This time as the team discusses and negotiates the

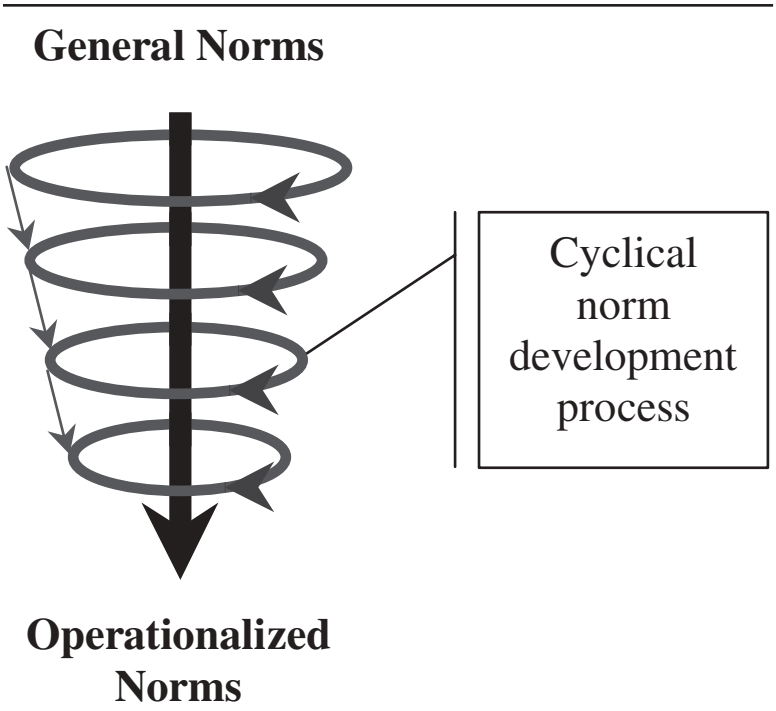

Figure 4: Cyclical Process of Norm Development

norm, the two team members who felt that Behavior B violated the norm were persuaded that the behavior was acceptable.

This example demonstrates that through this process, the individual norm boundaries slowly become more and more similar. Over time, the team members will develop a more unified sense of what behaviors are acceptable to the team and what behaviors are not acceptable.

DISCUSSION

There are many potential implications for the findings of this study. This section presents a theoretical implication of the findings

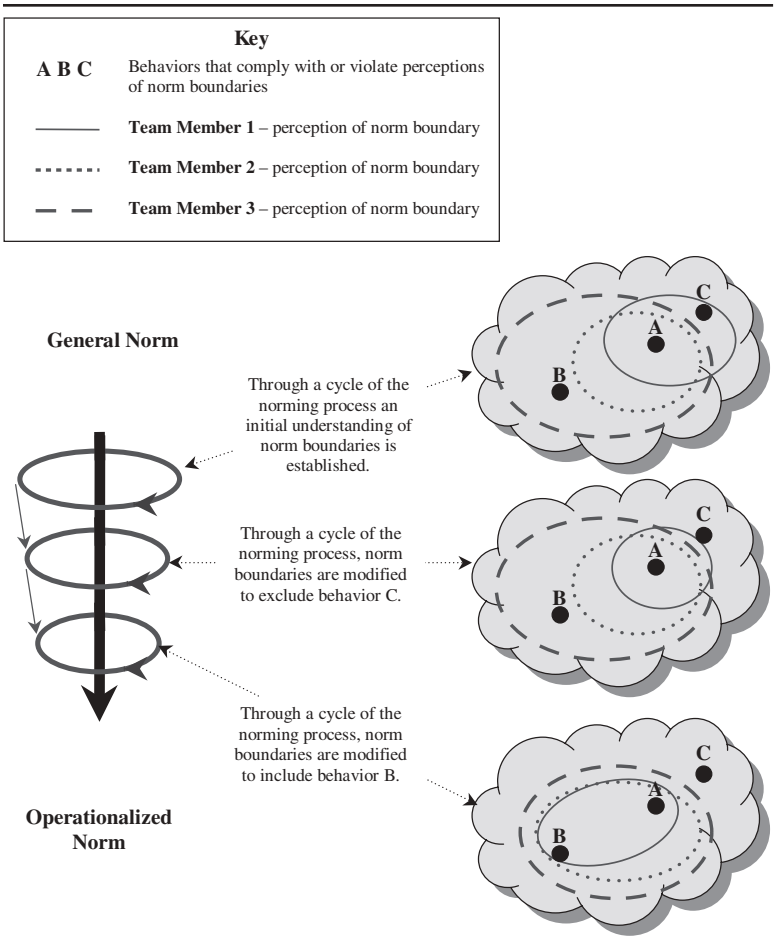

Figure 5: Individual Norm Boundaries Changing Through the Norm Development Process

as well as possibilities for their practical application. Then, limitations of the research findings are presented, followed by opportunities for future research.

THEORETICAL IMPLICATIONS

Many popular models of group development can be characterized as "progressive models," which describe groups moving toward increased performance over time by progressing through stages of development (Mennecke et al., 1992). Tuckman's (1965) classical example of this model characterizes the stages of development as forming, storming, norming, and performing. Later, a final stage, adjourning, was added to the model (Tuckman & Jensen, 1977). According to this model, a team begins in the forming stage. As the team members become aware of their differences, they enter the storming stage, which is characterized by conflict among team members. The team exits the storming stage by resolving the conflicts in the norming stage, where norms are established to address team differences. Once these issues are addressed, the team begins to be productive in the performing stage, where they hopefully stay until the dissolution of the team in the adjourning stage.

The researcher feels that the process of norming should be more central to the group development process than Tuckman's (1965; Tuckman & Jensen, 1977) model represents. According to Tuckman's model, norming is a distinct activity that occurs as a response to conflict, or "storming." This does not really account for norms that can preempt conflict or norms that are developed and refined while a team is forming or being highly productive. According to the model of norm development presented in this research, the process of norming could take place throughout all other stages of a group's life cycle. For example, during the beginning (or forming) time of a group's life, members may spend time getting to know each other and establishing common goals and expectations. Because team members may lack knowledge and experience, the norms established up front will likely be general rather than operational. Although general or fuzzy norms may be established at first, they are refined and operationalized as the team moves toward a level of high performance. Even when the team is working at a high level of performance, the norms may be refined to meet needs that arise from unanticipated events.

One might even consider what happens after the team adjourns or disbands. Do the established norms completely die? Norms established in a previous group will likely influence the expectations and development of norms in subsequent groups.

PRACTICAL APPLICATION

The model presented in this study could be applied to training learning teams to work more effectively together. Ideally, teams could be taught to develop norms that would help them to preempt team problems or conflicts that they might face. The instructor for the teams in this study tried to do this by teaching the teams Tuckman's (1965; Tuckman & Jensen, 1977) model and giving the students an opportunity to practice negotiating a set of group norms. One of the main reasons why this learning activity may not have been as successful as it could have been was that the students lacked the prior experience in working with on-line teams. Their inexperience with useful norm content limited their ability to form specific, operationalized norms. As they gained experience working in their first teams, they understood better what norms were needed to facilitate group success. During the second project team experience, the teams seemed to be much more efficient at developing operationalized norms.

Instructors could train teams to be better at establishing effective norms by (a) teaching team members the process of norming outlined in the model and (b) providing team members initially with brief experiences that highlight critical norm content. First, by teaching team members the process of norm development, the instructor would be giving the teams a tool that they could use throughout the group life cycle to communicate and negotiate team rules. Second, at the beginning of a semester, a teacher could use scenarios or mini group tasks specifically designed to expose students to common problems or issues that could be avoided if the teams were to form specific norms.

LIMITATIONS

Two primary limitations should be considered regarding this study. The first concerns the limited applicability of its findings to other contexts, and the second has to do with the limitations of the data used for analysis.

Limitations in Applicability

As with all research, the findings of this study are not intended to be blindly applied to all contexts in which there are on-line learning teams. Readers must determine how closely the context and findings of this study match their own context and what aspects of the model might be applied to other contexts. The findings and the model developed in this study were based on data gathered from 10 on-line teams in one class during one semester. Further research with added cases will help to expand and refine the outcomes of this research study.

Limitations of Data

The enormous amount of data used in this project was both a benefit and a limitation. The researcher was able to draw on a large pool of experiences and events, a rich set of data covering a broad range of issues with on-line learning teams. The size of the data set also posed a limitation because the researcher had to focus attention on the parts of the data set that seemed most likely to yield findings related to the norming process. It is possible that valuable nuggets of information hidden in more obscure places were overlooked.

Another factor that limited the findings of the research was the use of e-mail for communication among team members. The researcher did not have access to any of the e-mail communications between team members except in rare cases when the contents of an e-mail were posted for public consumption in the discussion forum. Although different teams used e-mail as a mode of communication to different extents, all teams used it at least sometimes. Without seeing the e-mails, the researcher had to depend on the interviews

to indirectly understand how the e-mail was used in the process. This was limiting because the participants could not be counted on to accurately remember the details of the content and frequency of their e-mail correspondence over the period of the project.

FUTURE RESEARCH

This section briefly describes three potential directions for follow-up on the research presented in this article: (a) the application of the model to facilitate norming in on-line learning teams; (b) implicit team norm development, including the potential for tools and environments to help groups to establish implicit norms; and (c) issues of norm enforcement in on-line learning teams.

Application of the Model

An implicit assumption throughout this research has been that teaching teams to explicitly establish norms soon after the team is formed could help prevent potential problems and conflict. In the current study, the students were taught a norming process that helped them to establish general rather than operational norms. The next phase of this research should assess the practical value of using the findings from this research to facilitate norm development in on-line learning teams. For example, how useful a tool will the model of norm development and norm content examples be in getting on-line teams to develop useful, operationalized norms early in the life cycle? In addition, will the model be helpful to instructors and students in efficiently dealing with problems and needs that occur during the life of their teams? Actually applying the model in an on-line learning context will help to identify its strengths and weaknesses as well as reveal aspects of the model that need to be updated and changed. It may also accentuate what additional aspects of the norming process need further research.

Implicit Norm Development

It was beyond the scope of this study to rigorously identify the norming process for implicit norm proposals. This could be a particularly promising area of research. In particular, it is important to look at how technological affordances help to establish implicit norms regarding how people will communicate and interact with each other. For example, structures in the environment and features of the tools used constantly affect the way people interact. It would be helpful to investigate how technological structures affect interaction norms and how communication tools can be designed to promote or facilitate certain types of behavior. Specifically, it would be interesting to look more in depth at characteristics of communication technologies that promote visibility, accessibility, and responsiveness. It would also be interesting to look at how on-line learning environments can be structured to help establish norms in the areas of responsibility and accountability.

Understanding Norm Enforcement in On-Line Teams

One area that seems difficult for learning teams in general is enforcing norms. Horne's (2001) framework for explaining the emergence of norms refers to the "control capacity of a group" or the ability for a group to enforce established norms. In the current study, there was very little evidence of norm enforcement other than individuals sanctioning themselves for violating a norm. Part of this may be because learning groups have a low "control capacity" or ability to deal with norm violations. It would be interesting to better understand what the mechanisms are for enforcing norms in an on-line learning situation—particularly when many of the violations may be unintentional due to the fact that a team member perceives the norm boundaries differently from other team members.

CONCLUSION

This study described a norming process that typically began with teams establishing general norms with fuzzy boundaries and then modifying the norms over time to make them more operationalized by more specifically articulating the norm boundaries. A cyclical model outlining several basic stages in the norm development process was presented as well as a model describing what was happening during the process at the level of individual perceptions. It is possible that understanding how the norming process works, along with some idea of critical norm content for computer-mediated teamwork, could help facilitate the rapid development of key norms in an on-line environment. One of the implications of this is that teams would be able to spend more time engaged in work or learning activities and less time in conflict resolution and other group dynamics activities. This is critical in a distance education environment where learning teams are used as an instructional strategy. The learning teams likely have a limited life span, and if the teams cannot become productive fairly quickly, they become an ineffective and inefficient strategy for engaging learners in the subject matter content. In addition, negative experiences with a learning team due to team conflict can taint a student's enthusiasm for learning the subject matter.

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