DEVELOPING MULTIDIMENSIONAL TRUST WITHOUT TOUCH IN VIRTUAL TEAMS

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Trust is essential for effective team performance and is often believed to require face-to-face interaction to develop. However, in virtual teams the luxury of these interactions may not exist. This paper explores the development of trust in virtual teams. Specifically, we focus on the multi-dimensional nature of the trust construct and the role each dimension plays as trust develops and grows. First, this paper suggests that initial trust in a virtual team is heavily dependent on the ability dimension while integrity and benevolence trust dimension assessments may develop over time throughout the life of the virtual team. Next, we recommend specific actions to ensure that the potential for the trust dimensions of ability, benevolence, and integrity is maximized in a virtual setting. Finally, we argue that by focusing on the three trust dimensions, a virtual team leader or organization can identify relevant actions and create a more hospitable environment for trust development without face to face interaction or touch.

INTRODUCTION

Advances in technology and tele-communications allow people to stay connected even when located in different times and places. Because of the growth of global business and increases in the number of employees working together from different locations, the concepts of business teams have become more "virtual." Research has shown that all teams, whether face-to-face, virtual, or semi-virtual, need trust to perform effectively (Benson-Armer and Stickel 2000; Hunsaker and Hunsaker 2008; Oertig and Buergi 2006; and Stoner and Hartman 1993). However some argue that "trust needs touch" (Handy 1995, p. 46). So the question is how do we create effective virtual teams without regular "touch" or in some cases without any face-to-face "touch"?

The vast majority of research speaks of the positive impact that trust has on teams (Erdem et al. 2003; Holton 2001; Hunsaker and Hunsaker 2008; Mazany et al. 1995; Thompson and Pearce 1992). Logically trust between virtual team members would also have a positive impact on team performance as explored by several researchers (Aubert and Kelsey 2003; Jarvenpaa et al. 1998). However, in the virtual environment, early research suggests that trust forms differently (Coppola et al. 2004; Kirkman et al. 2002). In the virtual setting we have a more difficult time establishing trust with each other because we lack information about each other and are unable to interact face-to-face.

In this paper, we focus on the multi-dimensions of trust commonly held to include the dimensions of ability, benevolence, and integrity, (Clark et al. 2009; Mayer et al. 1995; Schoorman et al. 1997), and how each of these dimensions can be impacted to make it more likely that trust will develop in a virtual team. We first explore existing literature explaining the importance of trust for team success, in particular virtual teams. We expand on this discussion by providing specific actions organizations should take to establish trust in virtual teams. Finally, we conclude with a discussion of how these action steps impact the three trust dimensions of ability, benevolence, and integrity.

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Virtual Teams

A virtual team is defined as "geographically and/or organizationally dispersed co-workers that are assembled using a combination of telecommunications and information technologies to accomplish an organizational task" (Townsend et al. 1998, p. 18). Virtual teams provide organizations with a flexible method to respond quickly to meet any need (Jarvenpaa and Leidner 1999; Solomon 2001). Additionally, virtual teams are often less costly and more profitable than face-to-face teams, especially when members are spread throughout a state, nation or the world (Cascio 2000). Finally, organizations can assemble workers from many locations with different skill sets, cultural backgrounds, or experience levels to better "fit" a situation (Hunsaker and Hunsaker 2008; Kirkman et al. 2002), to improve customer service, to provide access to global markets, and to increase environmental benefits (Cascio 2000).

While teamwork often contributes to job success, some drawbacks of virtual teams include high setup and maintenance costs, overcoming cultural barriers, and increased feelings of social isolation (Cascio 2000; Hunsaker and Hunsaker 2008). Some researchers argue that the dysfunctions of face-to-face teams are amplified in the virtual context resulting in problems such as social loafing, role overload, role ambiguity, absenteeism, and lack of organizational commitment (Jarvenpaa and Leidner 1999; O'Hara-Devereaux and Johansen 1994). A strong sense of trust helps to overcome many of these problems (Erdem and Ozen 2003; Holton 2001; and Prasad and Akhilesh 2002).

One obvious difference between virtual teams and face-to-face teams is a change in the communication method used by team members (Tan et al. 2000). Good communication is essential for establishing and maintaining trust (Huang et al. 2008; Walther and Bunz 2005), and virtual workers communicate differently than face-to-face teams. For example, members of a virtual team may communicate through e-mail, telephone conversations, and video conferencing mixed with a few face-to-face interactions while a purely virtual team would have no face-to-face contact. Many believe that some face-to-face interactions, especially without prior relationships with team participants, are essential for the formation of trust (Handy 1995; Holton 2001; Oertig and Buergi 2006; O'Hara-Devereaux and Johansen 1994) but may be impossible in many virtual settings.

Multidimensional Trust

Fukuyama defines trust as "the expectation that arises within a community of regular, honest, and cooperative behavior, based on commonly shared norms, on the part of other members of that community" (1995, p. 26). Similarly, Mayer et al. (1995) argue that trust is the acceptance of vulnerability based on the performance of expected actions of another party. When working with others we want to believe that they will behave or act in ways beneficial to us; therefore the existence of trust is critical. Early trust research measured a single trust characteristic (Johnson-George and Swap 1982; Soloman 1960; Strickland 1958) while more recent research argues for a more complex, multidimensional structure (Brashear et al. 2003; Butler 1991; Clark et al. 2009; Hung 2004). A popular current conceptualization introduced by Mayer et al. (1995) explore trust consisting of three dimensions: ability, benevolence, and integrity. Ability, benevolence, and integrity are separate factors that may independently vary from one another. "A trustee should not simply be deemed trustworthy or not trustworthy; rather, trustworthiness should be thought of as a continuum" (Mayer et al. 1995, p. 721) based on different levels of each dimension. Hung et al. further explore this stating that "trust is formed not only using the *perceived amount* of the interacting parties' ability, integrity, and benevolence, but also based on the *perceived importance* of each of these antecedents to the situation" (2004, p. 6).

Mayer et al. define ability as "that group of skills, competencies, and characteristics that enable a party to have influence within some specific domain" (1995, p. 717). A person may be highly skilled in a certain technical area and therefore that person will be trusted on tasks within that specific technical area. Although a person may be highly skilled in one area, that person may lack training or experience in another area. For example, if an individual lacks interpersonal communication skills, they may not be trusted to initiate contact with a customer, regardless of their ability to complete a task within his or her technical area. Schoorman et al. (2007) propose that ability judgments form relatively quickly in a relationship. These judgments are often based on previous reference points or ratings of performance.

The second factor, benevolence, "is the extent to which a trustee is believed to want to do good to the trustor, aside from an egocentric profit motive" (Mayer et al. 1995, p. 718). Mayer et al. suggest benevolence exists between a mentor (trustee) and a protégé (trustor). In this situation, the mentor is *not required* to help the protégé, but *wants* to help him or her. Therefore, the trustee has a positive orientation toward the trustor. Benevolence is related to each party's motivation towards relationship success. Schoorman et al. (2007) argue that benevolence is an experience dimension of trust and perceptions of benevolence will evolve with additional experiences as the relationship develops over time.

Mayer et al.'s final trust factor of integrity relates "to a set of principles that the trustor finds acceptable" (1995, p. 719). If the trustor does not follow the same set of principles as the trustee, then the trustee would not have integrity in relation to the trustor (McFall 1987). Mayer et al. explain that the

> consistency of a party's past actions, credible communications about the trustee from other parties, belief that the trustee has a strong sense of justice, and the extent to which the party's actions are congruent with his or her words all affect the degree to which the party is judged to have integrity (p. 719).

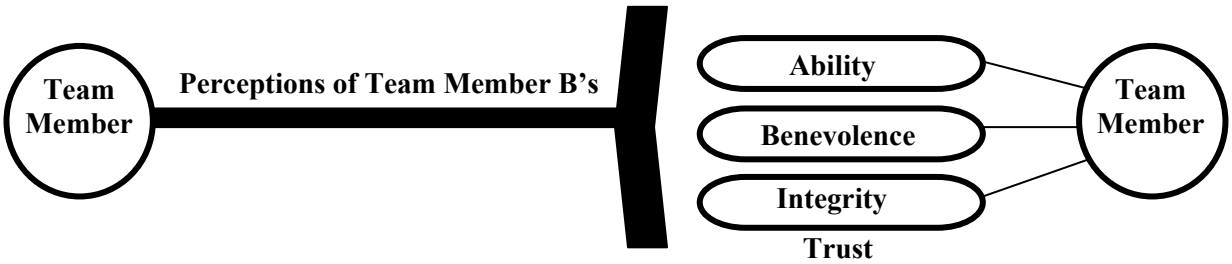
Schoorman et al. (2007) argue that the influence of integrity on the trust relationship will be most critical early in the relationship when there is little information available on partner benevolence. We will substitute judgments of a person's integrity with any previous knowledge of that person. Initially people more similar to us are often seen as having high integrity.

Trust and the Virtual Team

Trust is an important factor in any environment but in the virtual environment it is even more important since team members are unable to

FIGURE 1

Does Team Member A Trust Team Member B?



observe, monitor, and control each other's behavior (Aubert and Kelsey 2003; Hunsaker and Hunsaker 2008). O'Hara-Devereaux and Johansen (1994) believe that "trust is the glue" that holds the virtual team together explaining that trust prevents the physical distance from creating a psychological distance. They note that technology plays a role but is not sufficient to form the necessary relationships to hold a virtual team together.

Research has found that workers' trust in others is impacted by their ability to monitor what others are doing (Aubert and Kelsey 2003; Mayer et al. 1995). A high level of trust in a work setting may replace the need a manager has for control, monitoring, agreements, etc. In the virtual environment, it is argued that virtual team members have less ability to observe other workers than they would have in a face-to-face setting (Aubert and Kelsey 2003). Jarvenpaa et al.'s (1998) and Aubert and Kelsey's (2003) work focuses on virtual teams that are temporary, without a prior history, and lack a designated leader. Jarvenpaa et al.'s (1998) study of virtual teams provides some indication that virtual teams with high-trust exhibits swift trust. Swift or initial trust is trust that exists at the start of the team without any history. They note that virtual teams that develop swift trust seem to do so without a similar degree of "socialization, courtship, and social identification" (p. 810) typical of trust formation in non-virtual teams. Perhaps, as Jarvenpaa et al. suggest, this swift trust is based on how quickly team members initiate and respond to each other through e-mail at the onset of the project exhibiting a high ability to others.

Meyerson et al. (1996) believe that one way in which swift trust could be formed is based on positive stereotypes of group members. Jarvenpaa et al. (1998) point out that in their study, team members were not privy to much information on which to base such a stereotype. The development of initial trust in virtual teams may initially focus on the ability dimension of trust (Piccoli and Ives 2003). "When a virtual team is formed, teammates must communicate to evaluate the project requirements, make decisions regarding process and content, and provide feedback on one another's work" (p. 367). Piccoli and Ives further argue that the dimension of benevolence grows as experiences continue. "As the working relationship unfolds, team members develop expectations about individual workload, work processes, and individual contributions. As expectations arise about reciprocal obligations between teammates, a psychological contract is formed" (p. 367).

Kirkman et al. (2002) studied 65 virtual teams and concluded that the formation of trust is possible on virtual teams without face-to-face interaction. They explain that members of face-to-face teams form trust of their teammates after spending time with them often focused on socialization. They refer to this type of trust as benevolent or interpersonal trust. In contrast, a virtual team develops a different type of trust focused on the task which they refer to as ability-based or task-based trust. "Unlike face-to-face teams, where trust develops based on social bonds formed by informal chats around the water cooler, impromptu meetings, or after-work gatherings, virtual team members establish trust based on predictable performance" (Kirkman et al. 2002, p. 71). Additionally, Jarvenpaa et al. (1998) categorized virtual teams into low-trust or high-trust categories and found that high trust teams exhibited better team dynamics. High-trust teams are more proactive, focus on task output, have an optimistic spirit, dynamic leadership, frequent interactions with few gaps, and substantive, predictable feedback. In contrast, low-trust teams are reactive, focus on the process more than task output, and have a pessimistic team spirit, static leadership, infrequent interactions with many gaps, and unpredictable and non-substantive feedback.

In addition to an increased focus on the ability dimension, some researchers stress the need for virtual team members to get acquainted virtually through alternative means using such tools as chat rooms, video conferencing, discussion boards and social networking sites

(Anderson and Shane 2002; Prasad and Akhilesh 2002). Holton (2001) urge teams to take sufficient time to interact with team members online and to exercise caring talk. She describes caring talk as "personal conversations and storytelling" that help create a "mood of support and encourage self-disclosure and the sharing of feelings" (p. 36).

ACTION STEPS TO DEVELOPING GREATER TRUST IN VIRTUAL TEAMS

As with face to face teams, there are actions that can be taken to facilitate trust development in virtual teams, although these actions differ because of the higher focus on ability-related trust early in team formation. We focus on organizational factors, team member selection, team building activities, and communication. For each recommended action, we also highlight which trust dimensions (ability, benevolence, integrity) are impacted by the suggested measure. Recall that ability is an evaluation of whether a person can complete the required tasks, benevolence is an assessment of whether a person cares about the team member relationship, and integrity is an overall perception of whether a person is a good person. The combination of the three is believed to create a person's level of trustworthiness or an assessment of how much another person is likely to trust him or her (Mayer et al. 1995).

Organizational Factors

We begin with steps the organization can take to impact trust formation. If the organization wants to be successful in creating deeper trust in its virtual teams, it is important for the organization to create an environment that allows trust to occur. Many of these steps impact the amount of uncertainty and risk that exist in the overall environment.

Organization's Performance Evaluation and Reward Allocation. To facilitate trust formation in a team, the organization needs to determine how team performance will be evaluated and rewarded prior to the team formation. Without this information, team members will experience high uncertainty and will either trust or distrust according to their personality. High trust helps reduce and manage uncertainty (Jarvenpaa and Leidner 1999; Peters and Manz 2007). Similarly, an environment with a low level of uncertainty will make it more hospitable for trust to exist and grow.

In a team setting, many organizations provide both individual and team rewards based on team productivity and improvement in team performance (Denton 2006; McClurg 2001). Merriman (2009) found that rewards that consider how much an individual contributes to the team effort are important rather than basing rewards only on the team output (Merriman 2009). Teams with low trust have members focused on the equity of performance assessment and rewards while teams with high trust were more accepting of rewards based on collective team performance (Merriman 2009).

Prior to team formation, an organization should consider the impact that different reward and assessment structures will have on trust formation and overall team performance. To achieve the benefits of team work, it is essential that the reward system allows for risk-taking without severe harm to team members or team performance if the outcome is less than desired. Trust allows risk-taking and innovation to occur (Meyerson et al. 1996; Peters and Manz 2007). It is also very important that team members perceive that the rewards and assessment of job performance are fair and accurate (Mayer and Davis 1999). If they do not, team members lose trust for the organization. The additional uncertainty and risk also makes it difficult for team members to continue with high trust for each other.

Provide Role Clarity. If members understand their purpose and function on a team, it reduces uncertainty which helps to lower opportunities for interactions to be perceived as distrustful or with a negative motive (Meyerson et al. 1996). In many situations, an organization may want to explain to all team members what role each

person is selected to fill. By removing role ambiguity, the organization is providing a framework to direct how people should interact with each other. This is especially important when a new team is assembled.

There are other situations for which an organization may not want to clarify team member roles but rather allow the team to develop role clarity over time and for itself. Teams may need the flexibility to designate and modify team roles as circumstances require. For a new virtual team, we urge some role clarity at the beginning of team formation to reduce uncertainty thereby providing a more habitable environment for trust formation. Role clarity will positively impact team member motivation towards the group goals and increase their benevolence trust in the group.

Resources. An organization that desires to reap the benefits of team work must provide that team with the necessary resources for success (Scarnati 2001). Those resources include team members with the necessary skills, experience, and time to complete the team tasks (Holton 2001). Team members often are placed on teams without acknowledging that participating on a new team will be a significant increase in their work load. This lack of understanding by the organization can be the spark of distrust as members begin to feel they are asked to do an impossible task.

In a virtual setting, an organization must also provide the team with reliable and adequate technology and technical resources to support the work of the team (Anderson and Shane 2002; Prasad and Akhilesh 2002). Before the team is formed, the organization should have a clear understanding of what technology is available, how it may be used, and what resources it will make available to support the work of the team. Answering these questions prior to the team formation removes another area of uncertainty.

More tools are not necessarily better. Lu et al. (2006) in a study of global teams used by Intel found that too much variety in team practices had a negative impact on trust and communication. Variety of practices included the changing of team membership, the use of different technology among different teams, and the use of varying collaboration methods among the teams at Intel. Employees suggested that Intel develop a set of standard tools and processes for its teams and make them available in one common place. Miscommunication can occur if team members do not know how to use the tools effectively (Anderson and Shane 2002).

Selecting a Leader. A manager should also take great care in deciding who should lead the virtual team. The leader of the team consistently has been found to have a significant impact on team dynamics (Hunsaker and Hunsaker 2008). Jarvenpaa and Leidner (1999) discovered that poor leadership or the lack of leadership could hinder or dissolve trust. Ammeter and Dukerich (2002) found that the leader characteristics were the only significant predictor of team budget performance and the perceptions of team and project performance. The important leader characteristics were how the leader communicated the task goals, how the team aligned team member goals with task goals, how the leader created a feeling of empowerment among team members, and fostered a good work ethic (p. 8). A leader also plays a crucial role in leading a group through conflict and overcoming cultural differences in communication (Jarvenpaa and Leidner 1999; Oertig and Buergi 2006).

A team leader is a major factor in the quality of communication that occurs within the group, in providing content feedback, and in establishing group norms on how to deal with social loafers who do not do their part on the team (Jarvenpaa et al. 1998). An ineffective leader can contribute to low trust in the team. For example, Jarvenpaa et al. found that teams that ignored social loafers had lower trust.

If the team is selecting its own leader, the team must appreciate the importance the leader has in the success of the team. When a virtual team leader was selected for being the first to

volunteer rather than based on needed skills, leadership was a negative factor for the team (Jarvenpaa and Leidner 1999). In high trust teams, leaders were selected based on their skills after performing for the group (demonstrating ability). High trust teams were also able to move from a procedural to a task focus as well as handling conflict adequately. A leader plays a crucial role in these activities.

Individual Factors (Team Member Selection)

Personality Characteristics. A significant consideration for selecting team members is assembling the right mix of personalities (Anthoine 2008; Powell 2004). In a virtual setting, the desired personality traits may differ than those for a face to face team. For example, the need to have several extroverted members to make everyone feel at ease may not play as large a role in a virtual setting. A manager may discover that an introverted individual may have a different online personality because of the use of alternative communication tools (Holton 2001). Virtual team members need to have a personality that allows them to work with people different from themselves (Peters and Manz 2007).

To develop virtual teams with deeper trust, team members with a higher propensity to trust should be considered first. Poon et al. (2007, p. 353) argue that "a person with a propensity to trust tends to expect the best from others and has more optimistic expectations about outcomes." Additionally they argue that people who are predisposed to trust are more likely to be open, cooperative, and helpful to others which will lead to better relationships and higher work satisfaction. Team members who start with a tendency to trust others will begin with a higher initial trust than members who naturally are less trusting of others (Jarvenpaa et al. 1998; Mooradian et al. 2006). Also, if the manager places people on the team who are perceived to be good to their word and to do what is right rather than to take advantage of others, the initial level of trust will be higher until something damages that trust (Meyerson et al. 1996). Therefore propensity to trust is a critical factor in a situation where the parties are not familiar with each other or have little knowledge regarding the relationship.

There are short personality instruments that may help a manager assess a person's propensity to trust others. To measure whether a person is deemed trustworthy, a manager will have to make an evaluation based on knowing his or her employees' workplace. It may be possible to ask the employees to evaluate how much they trust others in the office. Researchers have also found that individuals high in personality traits of agreeableness and conscientiousness were perceived as being more trustworthy (Evans and Revelle 2008). In particular, these personality assessments will be most influential in establishing benevolence and integrity trust dimensions. By understanding a person's propensity to trust and their trustworthiness, initial assessments of team members' willingness to work for the

FIGURE 2

Factors Influencing Trust Formation in Virtual Teams

Positive Influences	Negative Influences
Propensity to Trust	Uncertainty
Communication	Risk
Team Building	Miscommunication
Resources	

team and their honesty will likely be greater (Colquitt et al. 2007; McKnight et al. 1998).

Diversity v. Similarity. Diversity in team membership is desirable for outcomes that are more creative, represent more interests, have group buy-in, and are "better" decisions (Mayo 1999). However, diversity in backgrounds and experiences may also result in more conflict and thereby impact trust formation. Selecting team members with some similarities, whether in personality, interests, needs, etc., facilitates trust creation (Meyerson et al. 1996). It is human nature to trust people who are similar to us (Koepcke 2007; Lu et al. 2009).

The manager faces a dilemma in deciding how to balance the need for diversity on a team while also having enough similarity so that team members are more likely to develop trust. To resolve this dilemma, a manager should first identify a team diverse in important skills, experiences, and backgrounds to get the task completed. Then, the manager should identify similarities between the potential teammates personalities, work habits, communication skills, and preferences and help team members realize they have these similarities by providing some interaction time or activities that allow these similarities to be shared. By demonstrating these similarities to the team members, a manager will likely improve integrity assessments.

Peer Feedback System. The decision of who should be on a virtual team is a crucial decision. Not only should a manager consider whether an individual has the experience and skills needed to do the task, but a manager will also need to select people that have some technical skills or at least a willingness to communicate using a variety of tools. In terms of experience, a manager should consider whether a person has experience with the subject matter but also whether a potential team member has experience with working in virtual teams.

To better understand an employee's teamwork skills, a peer feedback system could be developed similar to ratings used to evaluate online seller/buyer exchanges. Such feedback assessment should ask team members to evaluate a person's timeliness of response, willingness to communicate, willingness to work with others, flexibility in schedule, etc. These evaluations should focus primarily on an individual's willingness to work as a team member. The criteria for evaluating a team member's performance should vary based on the needs of the company and the task of that team. From these team member satisfaction ratings, a manager may find some employees are excellent selections for additional virtual teams while others should be avoided until weaknesses are addressed (Dominick et al. 1997; Ramsay and Lehto 1994).

An established feedback system will help an organization understand which team members have the ability, benevolence, and integrity to be successful on a virtual team. Not all employees have the skills, motivation, or discipline to function well in a team environment. Due to technology requirements, the need for regular communications, and lack of direct oversight, a virtual team environment is likely even more difficult for employees to thrive. Not only will a feedback system provide information regarding a specific employee's capabilities when assigning teams, they will also provide a basis for initial trust assessments between team members. Much like a consumer might read previous consumer ratings to evaluate an online seller, team members can view these ratings of unfamiliar individuals to get some understanding of how they had previously performed.

Team Building

Purpose of Team Building. Once team members are selected, the next step to facilitating trust development is getting them ready to function as a team. In a typical team, Stoner and Hartman (1993) described three main goals of team building interventions: orient team members to the complexity and challenges of the team building process; facilitate members in identifying the needs and resources of the team; and establish a good process for handling team conflict. Mazany et

al. (1995) cited the goal of team building exercises as increasing the team's efficiency and effectiveness. A critical element to team building success is to "build trust among individuals and groups throughout the organization, up and down the hierarchy" (Mazany et al. 1995, p. 51).

Goodbody (2005) suggested that an initial team building activity for a virtual team should set goals and norms for the team, secure agreement on the team's mission, assign tasks, review team members' roles, skills, and experience, and provide team members an opportunity to discuss the previous issues. For team building to be effective, these exercises need to focus on the skills and needs of that particular team (Woodward 2006). If the goal is to increase trust on a virtual team, activities should focus on helping team member's assess fellow team member's abilities, benevolence, and integrity. One positive outcome of team building exercises is that they provide team members with an initial assessment of whether others will do what they say they will do.

Team Building Activities. Jarvenpaa et al. (1998) found that team building exercises provided team members with the ability to develop perceptions of each other in terms of ability, benevolence and integrity. Team building exercises in a virtual online class were effective for developing processes for future team work (Grzeda et al. 2008). In another study team building exercises were found to increase a team member's attraction to their group (Johnston 2007).

Although team building has the potential of

TABLE 1

Trust Development Exercises

Focus of Activity	Sample Activities
Skills Showcasing (Ability)	First, the leader should share with the team the skills that each member brings to the team. John was selected for his direct marketing experience, Sally for her technical skills, Bill for a deep understanding on the product, and Mary for product innovation. Then the leader explains a problem situation that the team needs to handle. The leader directs the team that in the next hour, using only the chat room and group decision software, they must solve a problem with our new product. Give the team some guidance as to the format of the outcome. Select a problem that allows each person to play an important role so they can show what they are able to do. You want the team to succeed so that they will have confidence in the skill set and make it more likely ability-based trust will form.
Socialization (Benevolence and Integrity)	Provide the team with interesting questions to answer and interact with each other on a chat or discussion board. You want a format that allows all team members to read the responses and interact. It works best to have the team members post a picture of himself or herself so people can begin to attach the information to an image. Ask about favorite vacation spots, what would you do with $1,000 if you had to spend it today or lose it, pet peeves in addition to basic information, etc.
Finding Similarities (Integrity)	Have team members interact using a chat or discussion board so that everyone can view the responses and interact. Have each team member find ten things they have in common with each of the other team members. You may want to forbid the obvious things (hair color, work for the same company, are a female) or just raise the number to 15 so that each member has to move beyond those things.
Reliability Showcasing (Benevolence)	As the team leader, establish norms about how the team will communicate. Then ask the team to provide you with certain information, in a certain way, by a given date. You could ask the team to provide you with the list of similarities between all team members that were generated in the earlier exercise. The goal of this exercise is for team mates to meet deadlines and do what they were asked to do. Another option would be to pair team members and ask them to work together to complete a few tasks.

increasing team performance, the benefits must be weighed against the costs to the organization (Mazany et al. 1995). The leader must be clear about the objective of the team building exercise (Miller 2007). If the purpose is to facilitate trust formation, then the benefit derived from increased trust may be a long term benefit not reflected in short term figures. We believe costs should be considered when evaluating what type of team building exercise to use with a virtual team. Conducting a face-to-face exercise may be costly but may achieve the desired results better and faster. Table I provides some examples of team building exercises to foster trust development in a virtual team.

Communication

The frequency and quality of communication influences whether trust forms in a virtual team (Holton 2001; Hunsaker and Hunsaker 2008). In the virtual setting, the interaction between communication and trust appears strong. Jarvenpaa and Leidner (1999) found that social communication early in the team's formation was very important to the development of initial trust. They also found teams with high initial trust had early social communications with a lot of excitement and enthusiasm. Teams that ended the project with high levels of trust had predictable, regular, and equitable communication patterns throughout the project. Teams that started and ended with high trust routinely received timely messages from team members verifying that their work was received reviewed, and feedback was provided. Because communication is so important to the development of team trust, organizations should provide clear communication guidelines to their virtual teams. The leader of the team must also adhere to these guidelines.

Set Communication Norms for Response and Action. Since virtual team members are not located in the same place and they cannot verify through sight that a member is present or working on a project, some believe that trust is critical to monitoring (Hunsaker and Hunsaker 2008; Meyerson et al. 1996). Team members must trust that members are doing what they are supposed to be doing and rely on status reports from each other. Uncertainty grows when communication is lax. Communication at expected points in time with sufficient information helps to remove uncertainty.

Coppola et al. (2004) found that communication must occur immediately in an online environment for trust to develop. Iaconna and Weisband (1997) in a study that examined e-mail communication between virtual team members found that members with continuous and frequent communication maintained high levels of trust with team members. Additionally, Johnston (2007) found that certain types of communication impact the formation of group cohesion. Hambley et al. (2006) found that face to face teams developed greater cohesion than chat teams and video conference teams. In a virtual setting, Jarvenpaa and Leidner (1999) found there is a deep need for team members to respond to each other's work.

Therefore group norms to direct the communication practices of team members should be set early and standardized (Hunsaker and Hunsaker 2008). For example, it is good communication practice for each team to designate a primary way of communication (e-mail, text message, team message board, etc.). Each team member should check this designated communication medium at least once every 24 hours and respond immediately when a message is received. Team members should agree to use a team calendar to record times of unavailability. Teams should discuss the suggested norms and adapt them to the specific needs and styles of the members and the group task. By establishing group communication norms, trust assessments on the benevolence and integrity dimensions will be improved. Group members will have a better understanding of their requirements and others' expectations. This will lead to more motivation towards group goals and greater honesty and openness among members.

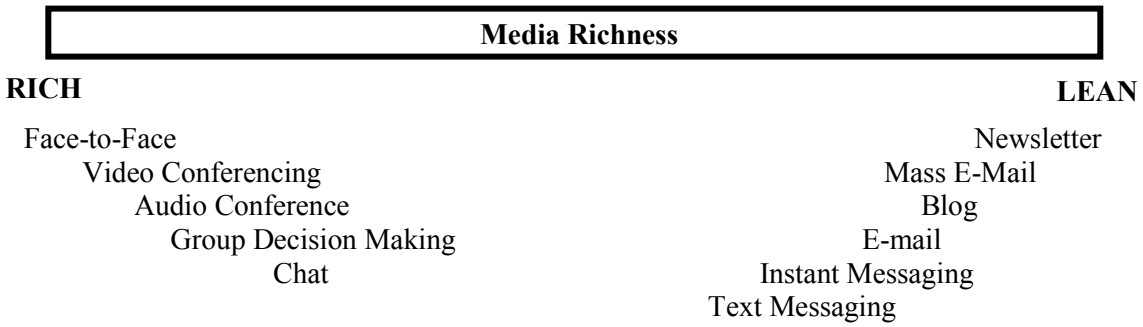
Match the Communication Medium to the Purpose of Communication. There are two main theories that tie virtual team communication to trust formation. Media richness theory focuses on the type of communication that occurs and the degree to which the parties communicating can clear up ambiguities (Andres 2002; Daft et al. 1987; Janvenpaa and Leidner 1999). Choosing the right medium is pertinent to the development of trust because increased uncertainty strains trust. See Figure 3 for media richness levels of common communication channels used in virtual settings.

In contrast the social presence theory argues that humans have to have social interaction, often characterized as face-to-face interaction, for trust to form (Andres 2002; Jarvenpaa and Leidner 1999; Short et al. 1976; Warkentin and Beranek 1999). These face-to-face interactions contain multiple modes of communication including nonverbal cues (eye movement, facial expressions, hand gestures, body posture, and other body language) as well as paraverbal cues (tone of voice, inflection, volume, pace) (Trevino et al. 2000; Warkentin and Beranek 1999).

Communication in a virtual setting is often less rich because team members lose some of the cues that are available in a face-to-face setting (Andres 2002; Jarvenpaa and Leidner 1999). Knight et al. (2008) found that face-to-face teams had greater group cohesion than virtual teams. In another study comparing face-to-face teams to virtual teams, Andres (2006) found that face-to-face teams exhibited more team-wide communication while subgroups of the virtual teams seemed to seek clarifications frequently, signaling confusion and perhaps mistrust. By using a wide variety of communication mediums, team members will have a greater number of experiences with each other. This variety will lead to increased assessments of all three trust dimensions over a shorter period of time.

Studies have found that effective managers know how to use the appropriate communication medium for the type of message being conveyed (Lengel and Daft 1988; Whitworth and Riccomini 2005). Lengel and Daft (1988) concluded that a high-performing manager used a rich medium for non-routine communication for which there is complexity, potential for emotional response, and no common frame of reference between the manager and the employee. Conversely, a lean medium worked best for conveying routine communications which are simple and straightforward. Organizations should also consider the source of the communication. Whitworth and Riccomini (2005) found that managers in a face to face meeting were the most credible source of information. Information conveyed in an Internet chat room was deemed the least credible source.

FIGURE 3
Richness of Virtual Communication Channels



Communication Types and Tools. Organizations should ensure that all team members understand and are comfortable with using a variety of communication tools available to them. They should also know which tool and which medium to use for different types of communication. Communication that is dominant, open, attentive, friendly and relaxed was found to be positively related to group cohesion (Johnston 2007).

Despite all the tools available to teams, Grzeda et al. (2008) found that in an online setting team members often reverted to communication tools which they were most familiar (e-mail) rather than using new methods better suited to the task. In a study comparing virtual teams who had received virtual team communication training to teams who had not, they found that team who received the training had increased levels of trust (Warkentin and Beranek 1999). Based on this finding, it is important to provide communication training in the virtual environment as part of the team building activities or orientation sessions. By increasing the number of communication methods (i.e. video conferencing, chat sessions, etc.), team members will likely experience a more rich communication environment and will build

TABLE 2
Virtual Team Factors Influence on Trust Dimensions

	Abilities	Benevolence	Integrity
Organizational Factors			
Performance Evaluation and Reward	X		
Role Clarity		X	
Team Resources (time, skills, technology)	X		
Selecting a Team Leader	X		
Selection of Team Members			
Propensity to Trust (can I trust)		X	X
Trustworthiness (can I be trusted)		X	X
Similarities to Others			X
Feedback Systems	X	X	X
Team Building			
Socialization Team Building		X	X
Skills Showcasing	X		
Reliability Showcasing		X	
Similarities Recognition Activity		X	X
Communication			
Communication Norms for Response		X	X
Communication Medium/Task Matching	X	X	X
Communication Types and Tools	X	X	X

stronger trust with other team members across all three dimensions.

SUMMARY OF IMPACT ON TRUST DIMENSIONS

As discussed above, trust is commonly characterized as consisting of three dimensions (Mayer et al. 1995). Ability is an assessment of whether the team member can accomplish what is asked. Benevolence is an assessment of whether the team member cares about the relationship between team members and the goals of the group. Finally, integrity is an assessment of whether the team member is a good person that is honest and open with others. The suggestions we made in the previous section to develop trust in virtual teams impacts the opportunity for team member's to determine the ability, benevolence or integrity of other team members. While all of our suggestions should improve trust among virtual team members, different ideas will impact the trust dimension in different ways. As you can see from Table II, many of the organizational factors we discussed will help to improve team member's assessments of others' abilities, while team member selection factors will more likely help to improve benevolence and integrity assessments.

SUMMARY AND CONCLUSIONS

Trust is touted as the glue that holds virtual teams together. This article examines team building and trust formation aside from looking at the individual differences of team members. Another area for research is to focus on the personality traits of team members and the fit between a team member's propensity to trust and preferred communication choice. We believe there is a strong relationship between a team member's preferred use of media and trust development. If team members communicate in the preferred way, we posit that trust will increase. If not, then trust will decrease. The door is wide open for future work as we try to understand established theories in the virtual context as well as developing new ones that apply directly. We believe the arguments we discussed should provide a stepping stone for future research.

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