

The Effects of Trustworthiness Perceptions on the Formation of Initial Trust: Implications for MIS Student Teams

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ABSTRACT

Teamwork is a growing part of management education. One aspect of ensuring a successful team experience as part of the educational process involves the formation of trust between teammates. We present the results of an experiment that examines how students form initial trust under two general conditions—when selecting teammates to complete class assignments (task context) and when selecting teammates to forge new relationships (relationship context). The findings indicate that the factors that result in trust are weighted differently, depending on the purpose of the teams. Teams that are focused on completion of a task weighed prospective team members' ability the most, while teams that were focused on forming friendships focused on the prospective team members' integrity. We present specific recommendations and an exercise that MIS instructors can use to encourage trust formation in their teams.

Keywords: Trust, Trustworthiness, Student Teams, Experiments, Repeated Measures Design

1. INTRODUCTION

Trust has become a major focus of researchers in the areas of management (Butler 1991), marketing (Doney et al. 1997), information systems (Jarvenpaa et al. 1999), organizational behavior (Mayer et al. 1995), and psychology [Rotter, 1971 #151]. Within a business environment, trust has been found to increase managerial delegation and employee performance (Mayer et al. 1995), as well as facilitate greater organizational citizenship on the part of employees, which can provide positive benefits for the organization. Trust has also been found to be a critical element in the formation and effectiveness of teams within the workplace.

Trust also provides benefits in team-based, academic environments (Huff et al. 2002). Trust allows students to remain focused on the problem, since teams that lack trust

require additional monitoring by their members. Collaboration may also increase, since team members that trust each other are more likely to sacrifice personal objectives for the collective good of the team (Larson et al. 1989). Overall, the potential benefits that educators see in the use of teams may, to a large extent, depend on the trust that facilitates successful teamwork.

The factors that encourage the formation of trust in teammates may differ, however, depending on the context in which the trust is occurring. As an example, the formation of trust in a business environment may be different than trust formed in close personal relationships. While research has established that a party's trustworthiness (i.e., the trustee's ability, benevolence, and integrity) is a primary determinant of trust (Mayer et al. 1995), little research has examined how these three factors may differ in importance in establishing trust when faced with different objectives or contexts. Examining the

effects of context may be especially important in an academic setting, since students form teams both within team-related contexts (MIS systems project) as well as within relationship-related contexts (social clubs, fraternities, sororities).

This study examines how information about potential teammates can influence the formation of initial trust in those teammates. Using an experimental design, we examine how trustworthiness may affect trust differently across two contexts that are especially relevant to students in an academic classroom—contexts in which completion of a task and the formation of relationships are the paramount considerations. While both of these contexts are typically critical in establishing effective teams, we isolate them to better understand how the formation of trust differs across the two contexts. We also examine the role of a student's propensity to trust and trust's relative efficacy in instilling behavior across the two contexts.

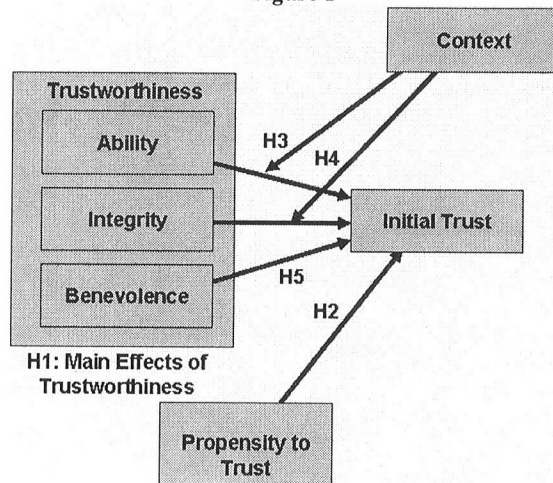
2. PREVIOUS RESEARCH AND HYPOTHESES

Our model (Figure 1) proposes that the trustworthiness of a prospective teammate will affect initial trust levels. We also propose that a trustor's propensity to trust—one's base level of trust in others—will also affect one's trust level. These relationships have been previously investigated in IS research (McKnight et al. 2002a; McKnight et al. 1998) . The main contribution of this study is the examination of context as a potential moderator for the effects of trustworthiness on trust (see Figure 1). We propose three new hypotheses to examine and clarify the nature of this moderating effect.

We define trust as “the willingness of a party to be vulnerable to the actions of another party” (Mayer et al. 1995). Trust has developed a large following within information systems research, starting with a focus on the cohesiveness and satisfaction of virtual teams (Jarvenpaa et al. 1998; Jarvenpaa et al. 1999). These studies were also among the first to apply the concept of swift—or initial trust—to the information systems discipline. Initial trust refers to “trust in an unfamiliar trustee, a relationship in which the actors do not yet have credible, meaningful information about, or affective bonds with, each other” (McKnight et al. 2002a). Previous research has found that trust can form early in a relationship based on first impressions, their perceived role, available information, or an immediate need to act (Meyerson et al. 1996). Within the context of our study, we examine trust as students' willingness to select another student to be a member of their learning partnership team.

Initial trust may provide preliminary momentum that allows deeper forms of trust to emerge. One framework for examining team development includes the stages of forming, norming, storming, and performing (Tuckman 1965). Consistent with these phases, it is possible that initial trust, which will occur at the very beginning of the team *forming* process, will have downstream implications

Figure 1



on attitudes and activities in all phases of team development (forming, storming, norming, and performing) and the future development of the team. Teams that lack trust must waste valuable time establishing personal rapport and monitoring and supervising each other's progress (Sitkin 1993). Within IS project teams, establishing initial trust may enable teams to overcome inertia and procrastination, since they have faith that their teammates have the skills, demeanor, and dependability required to accomplish the team's objectives. Understanding the complexities of how initial trust forms, therefore, may be critical to improving subsequent team performance both in a business and an academic setting.

2.1 Trustworthiness' Effect on Trust

Consistent with previous studies (McKnight et al. 2002a), we consider an individual's trustworthiness to be a separate construct from trust. While trust is the trustor's resulting willingness to act, trustworthiness is the perception of a teammate's characteristics, given the teammate's personal qualities. Trustworthiness reflects the belief that a trustee sufficiently demonstrates the qualities to warrant being trusted. Recent studies have defined trustworthiness as the belief that the trustee will act in a beneficial manner toward the trustor (McKnight et al. 2002a). Research has centered on the trustee's ability, benevolence, and integrity to parsimoniously capture the concept of trustworthiness (Mayer et al. 1995). Ability is defined as a group of skills, competencies, and characteristics that enable a party to have influence in a particular domain (Mayer et al. 1995). Integrity is based on a perception of shared values between the trustor and the trustee, including honesty, reliability, and fairness (Mayer et al. 1995). Benevolence is the extent to which a trustee is believed to want to do good to the trustor. Previous studies have established a strong link between the dimensions of trustworthiness (ability, benevolence, and integrity) and trust (Mayer et al. 1995). We present the following hypothesis to corroborate our model within the context of previous trust research:

H1: Trustworthiness (i.e., ability, benevolence, and integrity) will positively affect trust.

2.2 Propensity to Trust

Propensity to trust—also called dispositional trust (Kramer 1999)—represents a trustor's inherent tendency to trust another, independent of any information about the trustee. Propensity to trust represents a trustor's base (or default) level of trust, which is established as a result of an individual's success and failure in relationships with others. Conceptually, the less information trustors have about a person, the more they should rely on this base level of trust (Rotter 1971), since it represents an individual's inherent tendency to trust. Because this construct could be especially important in forming initial trust (i.e., trust in new relationships), we include propensity to trust in this study.

Since one's propensity to trust is deeply ingrained within each individual (Rotter 1971), it is unlikely to differ across contexts, acting instead as a consistent baseline level of faith in others. As a result, we propose that propensity to trust will be a significant, but consistent precursor to trust across the two contexts examined in this research.

H2: Propensity to trust will significantly predict initial trust, but will not differ within individuals across different contexts.

2.3 The Contextual Formation of Trust

Depending on the context, we propose that the trustor may weigh the components of trustworthiness (i.e., ability, benevolence, and integrity) differently in forming trust. Trust is inherently contextual. Almost everyone trusts his or her mother, but few professors would trust their mother to teach their class for them (unless she is trustworthy within this context). Hence, questions that center on whether or not someone trusts another should be recast as whether or not someone trusts another *within a specific context*. The relative importance of the three trustworthiness factors in different contexts thus becomes an interesting question, since the importance of ability, benevolence, and integrity may differ.

Examining initial trust within the team formation stage in an academic setting is an ideal environment to investigate the development of trust. Students join teams for a number of reasons—to meet the requirement of a class project (e.g., MIS systems project), to assist in the learning process (study groups), to meet new people (fraternities, sororities), and to explore common interests (religious associations). Within each of these examples, student teams are formed to complete at least two broad objectives—completion of a task (such as an information systems development project) and the forging of new relationships (such as joining a fraternity or sorority).

When a team's primary objective is the completion of a task (e.g., MIS project teams) we propose that a trustor will be willing to select teammates (i.e., trust) whom they perceive as having the highest levels of ability, since it is

this characteristic that best predicts whether or not the person can complete the task. Previous research has argued that ability is critical in forming trust when the trustor is focused on the trustee's capability for meeting his or her obligations to the trustor (Doney et al. 1997). Ability's relative importance in predicting trust may vary the most across contexts, since—unlike benevolence and integrity—context is inherent in its conceptualization (Mayer et al. 1995) and definition. Ability reflects the trustee's skills and competencies *within the relevant context*.

As an example, a student may perceive that her former IS professor is an expert in relational databases and may therefore ask his advice on a vexing database problem at her new job. Hence, the professor is perceived to be trustworthy in this context because she believes he has the ability to answer her question. Benevolence and integrity also likely play a role, since she must also perceive that he is willing to help (is benevolent) and will answer questions honestly (has integrity). In contrast, the student may not seek the professor's advice in a context that she perceives to be outside his knowledge domain—for example, legal advice on how to resolve a rental dispute. While the students' perceptions of the professor's benevolence and integrity remain favorable, perceptions of his ability do not. Hence, trustors who are focused on the completion of an important task are likely to weigh most strongly the trustee's ability to complete the task when forming their trust perceptions:

H3: Ability will differ in its capacity to predict initial trust across contexts, and will be most important in the task context.

In contrast, integrity may be most critical in the formation of initial trust when the focus is on the establishment of a relationship. Within a business environment, for example, employees are more likely to form bonds with managers who are perceived to be fair and just in their decisions (Dirks et al. 2001). Previous research has established the importance of integrity in establishing trust in interpersonal relationships (Lewicki et al. 1996). To form strong interpersonal relationships, the parties must perceive a congruence of word and action (Rogers 1959). This conceptualization is similar to integrity, which includes notions of fairness, consistency, and honesty (Mayer et al. 1995). Other research has found that the trustee's perceived character is important in establishing trust, and that integrity is a part of character (Gabarro 1978). Previous research suggests that the predictability of the trustee's action—also a characteristic related to integrity (Butler et al. 1984)—is important in establishing a relationship in the dating process (Burt et al. 1996) as well as salesperson-to-client relationships in the workplace (Burt et al. 1996; Doney et al. 1997).

Within student teams, integrity has also been found to foster trust and improve internal team relationships. One study found that honesty, openness, consistency of action, and respect—concepts all similar to integrity—fostered

trust within a student team (Larson et al. 1989). For these reasons, we posit that integrity may be most critical in forming initial trust in interpersonal relationships and contexts.

H4: Integrity will differ in its capacity to predict initial trust across contexts, and will be most important in the relationship context.

Across different contexts, the importance of benevolence may vary less than either ability or integrity (Mayer et al. 1995). While previous research has found that ability, benevolence, and integrity all affect trust, it has also been proposed that benevolence is less important when forming trust in new relationships than in established ones (Mayer et al. 1995). Ability and integrity perceptions can form early in relationships if credible third-party information (e.g., reputation) is available (Doney et al. 1997). Benevolence perceptions, on the other hand, involve an assessment of the trustee's intentions and motivations within a specific trustor-trustee relationship (Mayer et al. 1995), which requires interactions and experiences with a particular trustee over a longer period of time. Within an initial trust environment, there is little basis for benevolent intentions, since the trustor knows little about the trustee's intentions at this stage.

If this theorizing is true, then benevolence perceptions may be less likely to vary across contexts than either ability or integrity, since this strong foundation has not been established in initial trust relationships. While benevolence perceptions have little basis early in a relationship, some level of benevolence perceptions may need to be present for initial trust to form. Trustors may need to perceive that a trustee will act in accordance with their best interests—or at least not sabotage them:

H5: Benevolence will be significant in its capacity to predict initial trust, but will not differ in its importance across the two contexts.

Research has established that trust can instill action even when facing potential loss (McKnight et al. 2002b). As a test of our model's concurrent validity with previous trust studies (Mayer et al. 1995; McKnight et al. 2002a), we include the students' behavior subsequent to trust. Within the context of this study, students "trust" when they are willing to select a prospective team member to be on their team. To confirm concurrent validity, we would expect a significant, positive relationship between trust and student behavior.

3. METHOD

Because of the potential complexity of controlling for external factors and a desire to reduce plausible alternative explanations, we utilized an experimental design to increase internal validity. We created an environment that that was important to the students who participated in this study. Students were told that the university was exploring

the learning partner model, where students work together to learn the course material. The students were told that their evaluations of the included students would be used to match up candidates for learning partner teams. These teams would be used as study groups to assist students in their learning process throughout their chosen curriculum. Because the students would be involved with the selected students over the course of their academic career, they were encouraged to give strong consideration to the implications of their decision. In short, students had a direct stake in the decision outcome.

The use of an experimental design also allowed us to investigate the formation of initial trust across contexts in a more controlled fashion. Most studies in this area have relied on a survey methodology, which limits causal inferencing (Judd et al. 1991), and creates difficulties in comparing results across contexts because of the presence of numerous confounds. The disparate and conflicting nature of previous research suggests the use of more controlled research designs to reduce the affect of external factors.

3.1 Experimental Design

We asked each participant to evaluate students in two contexts for membership on their learning partnership team. One of the contexts focused on a team that was focused on completing class assignments; the other context was social and focused on selecting a student to establish relationships (friendships) within the team. These contexts were not meant to be exhaustive or mutually-exclusive: instead, they were selected by the researchers to represent two potential objectives that students pursue when forming teams within an academic context, and for their potential in drawing inferences about the trust formation process. While in reality students will likely consider both the task and the formation of relationships and friendships in forming teams, our desire was to isolate these two goals as much as possible to facilitate examining how the formation of trust may differ in different contexts. We presented the two contexts in a random order.

The survey instrument contained information about the two prospective teammates. Students were told that the two students were in their major, but that the names had been changed to hide their identities. To assist the students in their selection, we provided students with written evaluations of the prospective team members' performance from a previous class. We in fact developed these descriptions of low, medium, and high levels for ability, benevolence, and integrity (Appendix A). Each participant was randomly assigned to one of the twenty-seven possible combinations of these three trustee characteristics. The same combination of ability, benevolence, and integrity levels was then used across the two different contexts for each participant. The cell totals across experimental conditions were fairly evenly distributed across the twenty-seven conditions (see Tables 1a and 1b for cell counts and descriptive statistics).

Table 1a: Descriptive Statistics by Cell Task Context

Ability	Benev	Integrity			Totals
		Low	Medium	High	
L	L	1.95	2.09	2.19	2.08
		0.50	0.56	0.38	0.48
		13	14	13	40
	M	2.00	2.30	2.56	2.29
		0.60	0.58	0.66	0.64
		13	14	13	40
	H	2.19	2.41	2.34	2.32
		0.65	0.59	0.86	0.70
		12	14	14	40
	Totals	2.05	2.26	2.36	2.23
		0.58	0.58	0.67	0.62
		38	43	40	120
M	L	2.48	2.73	2.92	2.70
		0.65	0.66	0.52	0.63
		14	13	13	40
	M	2.20	2.61	2.92	2.56
		0.58	0.53	0.92	0.73
		15	14	13	42
	H	2.69	2.88	2.98	2.85
		0.65	0.76	0.49	0.64
		13	14	14	41
	Totals	2.45	2.74	2.94	2.71
		0.64	0.65	0.65	0.68
		42	41	40	123
H	L	3.00	2.64	3.00	2.88
		0.84	0.51	0.55	0.66
		14	14	14	42
	M	2.75	3.09	3.45	3.09
		0.77	0.89	0.49	0.77
		14	14	14	42
	H	2.75	3.35	3.81	3.29
		0.64	0.74	0.55	0.77
		14	15	13	42
	Totals	2.83	3.03	3.41	3.09
		0.74	0.77	0.62	0.75
		42	43	41	126
Totals	2.45	2.68	2.91	2.68	
	0.73	0.74	0.77	0.77	
	122	126	121	369	

Each cell lists the mean, standard deviation, and cell count.

Students were told verbally and on the survey that they could select one, two, or no students to be on their team: the number selected was entirely up to them. Gender-neutral names (“Chris” and “Terry”) were used in the two scenarios to reduce gender bias in the responses. Students were later briefed on the actual purpose of the study. This design varied only the context: the questions across the two tasks remained as consistent as possible (Appendix B). Given that each participant was measured under both contexts, this design can be considered a repeated measures design, which is more efficient than simple random assignment (Judd et al. 1991).

3.2 Background on Respondents

Three hundred seventy students at a large public university on the western coast of the United States participated in this research. Surveys were collected during two sections of a junior level course in management information systems; students fulfilled a course requirement by

participating in this study. One section contained 158 students (43%); the other contained 205 students (55%); seven students (2%) did not identify their section. Fifty-six percent of the sample consisted of males. The mean age was 21.3 years, with a standard deviation of 2.3 years. Ages ranged from eighteen to forty-three. Twenty-six percent of the students were freshmen; forty percent were sophomores; twenty-seven percent were juniors; and five percent were seniors. Four students (one percent) classified their status as “Other.” Statistical tests confirmed that no differences for the two trust measures existed for class status, gender, and course section. No significant correlation existed between age and the trust measures.

3.3 Measures

All study measures are listed in Appendix B. Our measures for propensity to trust consisted of two new questions, which we averaged together to create the final propensity construct. It is desirable to have at least three correlated items for a reliable scale, and the inclusion of only two items may therefore limit our ability to draw conclusions about the effects of students' propensity to trust. We will consider these limitations in the interpretation of our results.

With the exception of student behavior, we used established scales for all of our measures. To determine if our manipulations of ability, benevolence, and integrity were successful, we included three manipulation check questions (Mayer et al. 1999) for each of the three constructs. For trust in the task context and trust in the relationship context, we measured trust using four questions adapted from previous research (Mayer et al. 1999). Since the behaviors that result from trust are necessarily dependent on the context in which they occur, we created four questions for each of the two contexts to determine whether the respondents would select the candidate to be a member of their team. These measures gauge the extent that the trustor would act on his or her trust perceptions, and will be used to test concurrent validity for the trust to behavior relationship. Questions differed slightly to conform to the relevant context (selection of student to complete the task, selection of student to form a friendship). All Cronbach's alpha levels exceed the accepted 0.70 standard, indicating our measures exhibit acceptable reliability. Based on these results, we created construct level variables by averaging together the appropriate questions.

3.4 Manipulation Checks

To test the effectiveness of our manipulation of ability, benevolence, and integrity, we conducted a series of ANOVAs. We used the trustworthiness constructs as the dependent measure, and assigned the treatment groups for the independent measures to assess whether the means increase for the low, medium, and high treatment levels. The ANOVA results indicate that a difference exists ($p < 0.001$) for each of the experimental conditions and that these means increase with the treatment level (Table 2). Subsequent Bonferroni tests indicate that—with one

Table 1b: Relationship Context

Ability	Benev	Integrity			Totals
		Low	Medium	High	
L	L	2.25	2.61	2.96	2.61
		0.69	0.71	0.75	0.76
		13	14	13	40
	M	2.48	2.57	3.08	2.71
		0.71	0.55	0.72	0.70
		13	14	13	40
	H	2.69	3.30	3.30	3.12
		0.68	0.63	0.63	0.69
		12	14	14	40
	Totals	2.47	2.83	3.12	2.81
		0.70	0.71	0.70	0.74
		38	42	40	120
M	L	2.71	2.75	3.21	2.89
		0.59	0.54	0.57	0.60
		14	13	13	40
	M	2.57	2.82	3.38	2.90
		0.58	0.53	0.75	0.70
		15	14	13	42
	H	2.92	2.77	3.41	3.04
		0.59	0.73	0.51	0.66
		13	14	14	41
	Totals	2.73	2.78	3.34	2.94
		0.59	0.59	0.60	0.65
		42	41	40	123
H	L	2.20	2.68	3.07	2.65
		0.69	0.82	0.40	0.74
		14	14	14	42
	M	2.57	2.46	3.21	2.75
		0.54	0.71	0.80	0.76
		14	14	14	42
	H	2.55	2.87	3.50	2.96
		0.63	0.52	0.56	0.68
		14	15	13	42
	Totals	2.44	2.67	3.26	2.79
		0.63	0.70	0.62	0.73
		42	43	41	126
Totals	2.55	2.76	3.24	2.85	
	0.65	0.67	0.64	0.71	
	122	126	121	369	

Each cell lists the mean, standard deviation, and cell count.

exception—the treatment levels for both contexts differ ($p < 0.001$) (Table 2). For the task context, the low and medium levels for ability differ at $p = 0.051$. From these

results, we conclude that the manipulation was successful, and that the three levels differ significantly from each other.

4. RESULTS

We used a repeated measures ANCOVA to determine the effects of the trustworthiness factors (ability, benevolence, and integrity) on trust. Trust within the two contexts was the repeated measure; ability, benevolence, and integrity were the between-subjects factors; context was the within-factor. We included the propensity construct as a covariate to control for an individual's base levels of trust, and included a covariate to control for the order in which the scenarios were presented. To test the assumption of

Table 2: Manipulation Check Results^a

	Task Context		Relationship Context	
	Avg.	p-value ^b	Avg.	p-value ^b
Ability				
Low	2.34		2.48	
Medium	2.59	0.051	2.96	<0.001
High	3.67	<0.001	3.59	<0.001
Benev				
Low	2.20		2.32	
Medium	2.57	<0.001	2.71	<0.001
High	3.23	<0.001	3.49	<0.001
Integrity				
Low	2.41		2.42	
Medium	2.81	<0.001	2.85	<0.001
High	3.44	<0.001	3.55	<0.001

^aF-test Values for ANOVA (for all, $p < 0.001$). For Task Context: Ability $F_{2,367} = 98.92$; Benevolence $F_{2,367} = 68.79$; Integrity $F_{2,367} = 70.42$. For Relationship Context: Ability $F_{2,367} = 63.38$; Benevolence $F_{2,367} = 92.79$; Integrity $F_{2,367} = 95.37$.

^bThe p-value columns list the Bonferroni post hoc test results that the probability that the manipulation check average is not significantly higher than the row immediately above it.

homogeneous variance, we performed Levene's test. For the task context, $F_{26,342} = 1.352$ ($p = 0.12$). For the relationship task, $F_{26,342} = 0.954$ ($p = 0.53$). In both cases, the null hypothesis of equal variance cannot be rejected. Hence, we assume equal variance for the analysis.

4.1 The Effects of Trustworthiness on Trust across Contexts

To determine if ability, benevolence, and integrity were significant predictors of trust across subjects, we examined the between-subjects results. We first examined the interaction effects and found none was significant (see left part of Table 3). The propensity to trust construct was highly significant ($p = 0.005$), indicating that it is an important predictor of trust independent of the context. This result must be interpreted carefully, given that the propensity to trust construct consisted of only two items. Main effects for ability ($p < 0.001$), benevolence ($p < 0.001$), and integrity ($p < 0.001$) were also all highly significant, indicating that they all have a significant effect on the formation of trust, independent of the context. Hypothesis 1 is corroborated.

4.2 The Contextual Process of Trust Formation

To determine if trust formation differs for each context, we next examined the within-subjects results. None of the higher-order interaction effects between context and the trustworthiness factors was significant (see second half of Table 3). Our control variable for ordering effects was significant ($p = 0.001$), indicating an ordering effect was

Table 3: ANCOVA Results

Between Subjects Effects						Within Subjects Effects					
Source	Sum of Squares	df	Mean Square	F	Sig.		Sum of Squares	df	Mean Square	F	Sig.
Intercept	293.84	1	293.84	517.40	<.001	Context	2.20	1	2.20	8.92	.003
Covariates						Covariates					
Prop. to Trust	4.63	1	4.63	8.15	.005	Context * Prop. To Trust	.02	1	.02	.09	.763
Ordering Effect	.007	1	.007	.01	.915	Context * Ordering Effect	2.84	1	2.84	11.53	.001
Between Factors						Within Effects					
A	23.43	2	11.71	20.62	<.001	Context * A	23.64	2	11.82	47.92	<.001
B	10.19	2	5.10	8.97	<.001	Context * B	.19	2	.10	.39	.680
I	42.84	2	21.42	37.72	<.001	Context * I	2.44	2	1.22	4.94	.008
Interactions						Interactions					
A * B	1.76	4	.44	.78	.541	Context * A * B	1.82	4	.45	1.84	.120
A * I	2.38	4	.50	1.05	.382	Context * A * I	.85	4	.21	.86	.486
B * I	1.70	4	.42	.75	.560	Context * B * I	1.79	4	.45	1.81	.126
A * B * I	4.23	8	.53	.93	.491	Context * A * B * I	2.94	8	.37	1.49	.161
Error	193.09	340	.57			Error	83.87	340	.25		

present within subjects. The interaction terms for context * propensity to trust did not differ across contexts ($p=0.76$), which is consistent with Hypothesis 2, confirming that propensity to trust represents a base level of trust which is consistent for each individual across contexts. We next examined the interaction effects for ability, benevolence, and integrity and the context variable. Interaction effects between context and integrity ($p=0.008$) and context and ability ($p<0.001$) were highly significant, but the interaction between context and benevolence was not ($p=0.68$). This result indicates that the integrity's and ability's role in predicting initial trust differs within subjects across the contexts, providing preliminary support for Hypotheses 3 and 4. Benevolence's role remains stable across context, providing preliminary evidence for Hypotheses 3 and 4.

To determine the differences in effect size for trust within each context, we next examined the partial eta-squared values to determine each factor's predictive power within the task and relationship contexts (the partial-eta squared on ANOVA/ANCOVA is comparable to R-squared in regression). For the task context, ability explains 24.3% of the trust variance, which contrasts sharply with the results for benevolence (2.8%) and integrity (8.8%). These results support Hypothesis 3's prediction that ability will be most important in establishing trust in contexts that are focused on the completion of a task: Hypothesis 3, therefore, is corroborated. For the relationship context, benevolence

(4.4%) and ability (1.6%) are fairly low, but integrity (18.6%) explains almost one-fifth of the trust variance. These results are consistent with our earlier proposition that integrity will be paramount in forging teams when forging relationships is the predominant consideration. Hypothesis 4 is, therefore, corroborated.

As a test of concurrent validity, we tested the relationship between trust in the task context and trust in a relationship context. For the task context, the F value indicates that the model is linear ($F_{1,368}=293.89$, $p<0.001$). The standardized beta coefficient was 0.84 ($p<0.001$); $R^2=44.4\%$ and $s=0.72$. For the relationship context the F value also indicates linearity ($F_{1,368}=64.95$, $p<0.001$). The beta coefficient was 0.42 ($p<0.001$); $R^2=15.0\%$ and $s=0.72$. For both contexts, therefore, the trust to behavior relationship is consistent and comparable to the levels found in previous studies (Gefen et al. 2003; McKnight et al. 2002b). Concurrent validity is supported.

5. DISCUSSION

This study contributes to the growing theoretical body of trust research by proposing a framework to explain how trust forms in student teams. We found that ability, benevolence, and integrity differ in their relative importance in establishing trust across two different contexts. We also contribute to the literature by corroborating previous empirical results using an

experimental research design. Much of the research investigating the formation of trust results has relied on correlative relationships, which are not causally interpretable (Cook et al. 1979). While some research investigating trust formation has used an experimental design (Deutsch 1958; Lindsfold 1978; Pilisuk et al. 1968), we could find no studies that explicitly address the question of how trust forms under different circumstances.

Our findings confirm that propensity to trust significantly predicts trust, and that this effect is consistent across contexts. Our results therefore support previous studies that have found base levels of trust are important when examining trust when the trustor knows little about the trustee (cites). Our results indicate that these base levels have a minor effect compared to individual trustworthiness levels, however, indicating that trustors rely more on their perceptions of an individual's characteristics, and less on their personal disposition to trust others.

Our findings support the proposition that context influences the factors responsible for trust formation. We found that students whose purpose is to complete a task (e.g., homework assignments, projects) focus on team members' ability first when creating initial trust perceptions in prospective team members during the team formation process. We confirmed that trustee ability was the strongest predictor of trust when completing the assigned task is a student's primary concern (H3). We also found that integrity is considered second, and then benevolence. This result is consistent with previous findings in the marketing literature. Previous research has found, for example, that expert salespeople are perceived to be more trustworthy (Busch et al. 1976; Crosby et al. 1990). Our results also support previous examinations of trust in student team (Huff et al. 2002).

Within a college environment, however, students also join teams for camaraderie and friendship. The results for the relationship context strongly contrast with the task-context, indicating the students weigh integrity the most when choosing team members within this context (H4). Clearly, relationships serve a different need than the completion of a desired task. A critical aspect related to relationships is the ability to share confidences, as well as the right to ask for help and the obligation to reciprocate when asked. Both of these factors are included in the concept of integrity; thus it is understandable that integrity plays such strong role in the formation of trust in this context.

The nature of the two contexts may explain our differing results. When focusing on the completion of a project or homework assignment, the implied commitment to the team may be less. Once the assignment is completed, task-oriented teams may be more likely to dissolve, since they have completed their reason for existing. In contrast, in contexts where the objective is to build friendships, integrity may move to the forefront, since teams fulfilling this need may tend to last longer. Future research should investigate these differences.

While the effect of benevolence was not as significant as ability or integrity, the underlying theory indicates that its effect may be more critical over the course of a semester in forming deeper forms of trust. Its consistent effect across our scenarios indicates that benevolence acts as a foundation for trust that is important regardless of the specific context. The concept of benevolence—doing good toward another (Mayer et al. 1995)—is similar in concept to mutual respect. Teams that can build from early successes may be more likely to foster the formation of team benevolence and respect, which theory posits is the basis for longer term relationships (Lewicki et al. 1996).

5.1 Implications for MIS Instructors

We have a number of recommendations for MIS instructors that result from our findings. Our results indicate that teams with low dispositions to trust may have difficulty forming trust—especially in the early forming stages of team development—which may affect the team's later capacity to perform at acceptable levels. Faculty may consider measuring students' propensity to trust levels before forming teams. One practice might be to mix students with high and low levels of propensity to trust, as this may mitigate the effects of cynicism. Mixing the teams may be especially important given that initial trust has been found to be a critical indicator of future levels of trust.

We isolated task and relationship objectives to better understand what fosters trust in these two disparate situations; in the actual classroom, these two objectives will likely merge. In an author's database class, as an example, teams have both relationship and task-oriented goals. Teams complete class assignments, but also contact each other for class notes, collaborate on assignments and ideas, and provide a safety net as classroom work and problems increase. Completion of tasks is critical in these teams, since each member is graded on the teams' quality of work. Forging relationships is important, since they must feel comfortable relying on each other (asking for help, delegating an important task to another). Hence, the formation of trust is critical for a team to be effective.

The main focus of this study is the formation of initial trust—that is, trust impressions created early in the forming stage of team development (Tuckman 1965). Initial trust may be especially critical because it may lead to more established forms of trust later (Jarvenpaa et al. 1999). To encourage the formation of initial trust, we now assign teams to a "social event." To receive full credit, teams must meet for at least one hour at a public location (e.g., restaurant, park, bowling alley). They must spend at least one hour together, and all team members must be present for that hour. We also tell the students that they will be graded on how much fun they have on the assignment, as reflected in the "report" that they submit to the class mailing list. In practice, all students receive the same grade, but students understand the underlying goal: to become more familiar and comfortable with their teammates.

To encourage discussion about trust, the instructor also leads a class discussion using the trust framework as a guide (see Appendix C). The class brainstorms about factors that undermine and foster trust in teams, and the trust framework acts as a useful model to better understand how trust may form through ability, benevolence, and integrity perceptions. The discussion ends with the creation of a team code of conduct, in which the students pledge to concentrate on the behaviors that nurture trust and avoid the behaviors that undermine trust. All students sign the contract and submit it to the instructor at the start of the semester.

The instructor also takes specific steps in organizing the class to encourage trust formation. The instructor starts with smaller exercises in the classroom that enable teams to gain confidence in their members by "proving themselves" to their team. For entity-relationship modeling, for example, each team member models a simple example and then explains his or her approach using the data model as a reference. Students are encouraged to challenge each other, but to also be supportive in reaching a consensus. Making mistakes is encouraged and learning the material becomes less intimidating, since the classroom exercises are not graded.

While the above recommendations seem simple, in our experience students do relate to these results and their implications. Interesting, in our experience, college instructors rarely discuss the basis for positive relationships within teams, nor do they offer suggestions on how to improve team process and team relationships. Students apparently are expected to discover the appropriate mix for themselves. The described framework for trustworthiness and trust offer an intriguing—yet easily understandable—framework for students to consider when developing their teams within an MIS classroom. These concepts also provide a common ground that the team can discuss when addressing problems within the teams (e.g., loafing as a lack of integrity, bickering as a lack of benevolence). In short, we encourage MIS instructors not only to consider the implications of our results, but to share them and offer them as a point of discussion among their students and their teams. We believe the resulting discussion will be a productive exercise both for the students and the instructors.

5.2 Limitations

The limitations of our research approach needs to be considered when interpreting our research contribution. Our propensity to trust measure had only two indicators. Results involving this construct should be interpreted with caution. Future research needs to improve this scale and expand the number of items. An additional line of research should confirm the common belief that propensity to trust's role as a predictor of trust decreases over time, which would help build a more comprehensive picture of trust formation.

It is also possible that our attempts to measure ability in the relationship context were less clear than in the task domain. The ability to create friendships may be less clear conceptually than one's ability to complete a task. If so, it is possible that this difference in clarity may explain ability's lack of effect within the relationship task. Additional research should examine alternative methods of measuring ability within relationships to clarify this potential limitation.

We took steps to isolate each context, so that the students would concentrate on the factors that were important in forming trust within that specific context. For each task, students were told to concentrate on fulfilling the context's relevant objective (e.g., completing the task, forging relationships). It is possible that our attempts to isolate the two contexts may not have been absolute. Even when given a specific task to complete, it is likely that students may also seek friendship within their teams. Our results support this possibility to some extent, given that integrity explained 8.8% of the trust variance within the task context. At the same time, it is likely that some levels of all three factors must be present for an effective level of trust to be formed. The salient of the objective, however, may ultimately determine the importance of ability, benevolence, and integrity within the relevant context.

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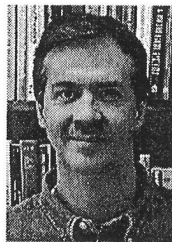
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APPENDIX A: SCENARIOS

The following list examples of the scenarios that were as part of the manipulation of ability, benevolence, and integrity perceptions. To clarify that each task represented a different person, we used a different name for the relationship context (Terry).

Ability (Task Context)

- Low: Chris had difficulty performing project tasks, and I lacked confidence that Chris had the skills required for the project. Chris simply was not qualified to complete tasks on this project.
- Medium: Chris was about average when it came to performing project tasks. Chris was an 'ok' performer, but really not a great or a bad performer. Chris' skills seemed 'middle of the road' compared to others that worked on this project.
- High: Chris had the capability to perform class tasks easily. Chris' skills were among the best on the team. Chris was highly qualified to complete tasks on the project.

Ability (Relationship Context)

- Low: For whatever reason, Terry just didn't have the skills to make friends. Terry's ability to get to know people well and have fun were clearly lacking
- Medium: While I established stronger friendships with other team members, there were also some that I didn't get to know as well as Terry. Compared to others that worked on this project, Terry's ability to form friendships seemed to be about average.
- High: Terry clearly has the ability to get along well with others, and enjoys having a good time. I was actually surprised at how many friends Terry has.

Benevolence (Same for both contexts)

- Low: On this project, Chris' own concerns were all that was important. Even when it was clear I needed help with something, Chris would avoid helping me. Sometimes, it seemed like Chris didn't like me very much.
- Medium: On this project, Chris had some concern for others, but also kept personal interests in mind. When Chris knew I needed help with something, Chris would sometimes help me. In the end, Chris didn't strongly help or hurt me in this project.
- High: On this project, Chris frequently put others' concerns ahead of personal concerns. When Chris knew I needed help with something, Chris would drop everything to help. I know that Chris really wanted to do what was best for me.

Integrity (Same for both contexts)

- Low: Chris would frequently say one thing, but do another. Even if Chris said, "I give you my word," that word would never be kept. Chris and I simply didn't share the same set of morals, and Chris didn't treat me fairly.
- Medium: Chris sometimes would say one thing, but do another. If Chris said, "I give you my word," Chris kept it most of the time. For the most part, Chris and I shared the same set of morals. In some cases, Chris was fair with me, but did take advantage on occasion.
- High: If Chris said "I will do it," Chris always completed the job. If Chris said, "I give you my word," Chris kept it every time. In that way, I agreed with Chris' set of morals, and Chris was always fair with me.

APPENDIX B: SCALES

All included questions are listed below. While not listed, the names of the referent for the grade task (Chris) differed from the names on the friendship task (Terry). Where the content of the questions differed in each of the two scenarios, the grade questions are listed first, then the friendship questions.

Propensity to Trust

1. I frequently put myself at risk in my relationships with other people
2. I frequently allow myself to be vulnerable to others' actions

Ability (Manipulation Check)

1. I feel very confident about Chris' skills to help me increase my grade / to form friendships / to be a mentor.
2. Chris has specialized capabilities that can increase my performance in this class / to establish friendships / to be a good mentor.
3. Chris is very capable of helping me increase my grade / have fun on this project / grow as a person.

Benevolence (Manipulation Check)

1. My needs and desires would be very important to Chris.
2. Chris would be concerned with my welfare.
3. Chris would really look out for what is important to me.

Integrity (Manipulation Check)

1. I like Chris' values.
2. Sound principles seem to guide Chris' behavior.
3. I would never have to wonder whether Chris will stick to a promise.

Trust

1. I would be comfortable giving Chris a task or problem which was critical to me, even if I could not monitor Chris' actions.
2. I would be willing to let Chris have complete control over something that was important to me.
3. If I team up with Chris, I really wish I had a good way to keep an eye on Chris.
4. If I had my way, I wouldn't let Chris have any influence over issues that are important to me.

Behaviors (Student Selection of Teammates)

1. In order to improve my grade, I would select Chris as a member of my team / In order to have fun, I would select Terry as a member of my team.
2. I would choose Chris as a learning partner.
3. Because I think it would be good for my grade, I would team up with Chris / Because I think we could be friends, I would team up with Terry.
4. I would not choose Chris as a teammate if I needed to improve my performance in this class/ if I wanted to have fun and make friends.

APPENDIX C: CLASS EXERCISE: ENCOURAGING TRUST IN YOUR MIS TEAM

Exercise, Part 1

To start a discussion of trust, the instructor usually asks the class the following questions, recording the class responses on a blackboard or whiteboard. Students are encouraged to record responses as they participate.

Question 1: In your prior team experiences, how have you or your teammates *undermined* your team's trust?

Typical Answers:

- Not showing up for meetings, class, etc.
- Not completing class assignments
- Being rude to team members
- Copying other teammates' work and submitting it as their own
- Making clear that the class is a low priority for them
- Being unprepared for class
- Not doing what they said they would do
- Not understanding basic class material
- Relying on other team members to do well in the class
- Keeping personal needs above the team

Question 2: In the past, how have you or your teammates *encouraged* trust in your team?

Typical Answers:

- Coming to team meetings prepared
- Communicating when s/he will be unable to attend a meeting
- Liking the class
- Taking things in stride; Easy-going; easy to talk to
- Communicating their expectations for class
- Coming to meetings/class on time
- Knowing class material well; smart
- Is willing to compromise

Exercise, Part 2

The instructor then introduces the class to the trust framework (see Figure 1). During the subsequent discussion, the instructor asks the class to relate the trust framework to their own experiences. The instructor then demonstrates that most of the items in the second list can be classified as ability, benevolence, or integrity:

Ability Expertise on the project. Capacity to complete the project's objectives.

Integrity Honesty; Keeping one's promise; Doing what someone says he will.

Benevolence Treating others with respect; Looking out for or anticipating the team's needs; Doing good toward others

Exercise, Part 3: Code of Conduct

The instructor assigns the development of a team code of conduct. The format of the document is unimportant. Students are instructed to use the generated list as a reference and to assemble a document that states that all team members agree to be bound by certain standards of trustworthy behavior. All team members sign to indicate their acceptance of its content.