

## CHAPTER IV: RESEARCH FINDINGS

The purpose of this study was to investigate the relationship between physical proximity to others in the workplace, the type of channels used in communicating with others, and feelings of organizational trust and psychological sense of community. Specifically, this study was aimed at learning more about the phenomenon of e-mail communication in the workplace and its relationship to organizational trust and psychological sense of community. This chapter presents a description of the sample, preliminary analyses of relationships between the constructs, and multivariable models to explain these relationships. The chapter concludes with a summary of the results.

### IV.1 Profile of the Sample

The data for this study were obtained from a large international organization composed of white-collar professional employees. The sample composition was 201 (58 percent) males and 146 (42 percent) females (see Figure IV-1). Participants ranged in age from 21 through 68 years with the majority of respondents (68 percent) under the age of 40 years (see Figure IV-2). Participants ranged in education level from high school to doctorate. The majority of respondents (51.8 percent) had a master's or doctorate degree (see Figure IV-3). Most of the remaining participants (26 percent) had at least a bachelor's degree.

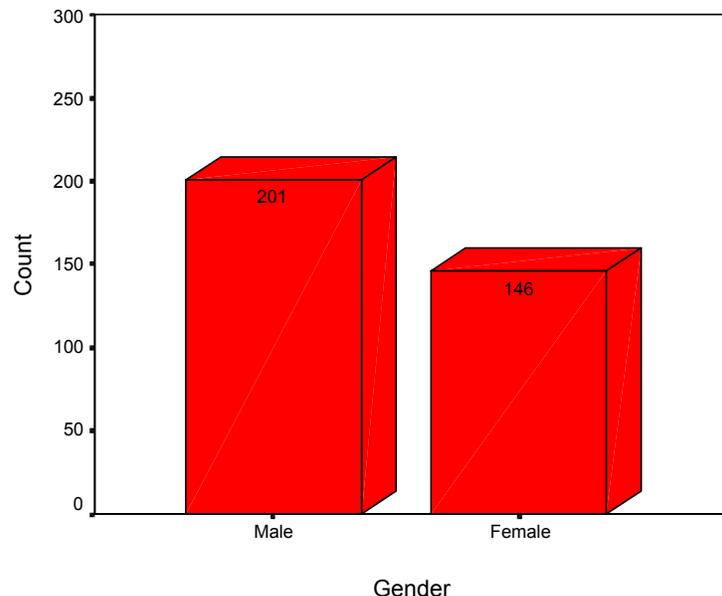


Figure IV-1: Number of male and female participants in this study

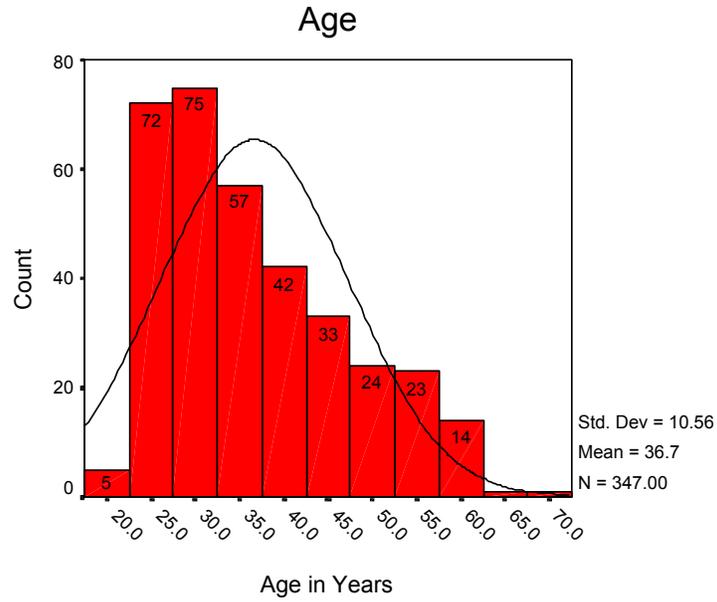


Figure IV-2: Frequency distribution of age in years of participants in this study

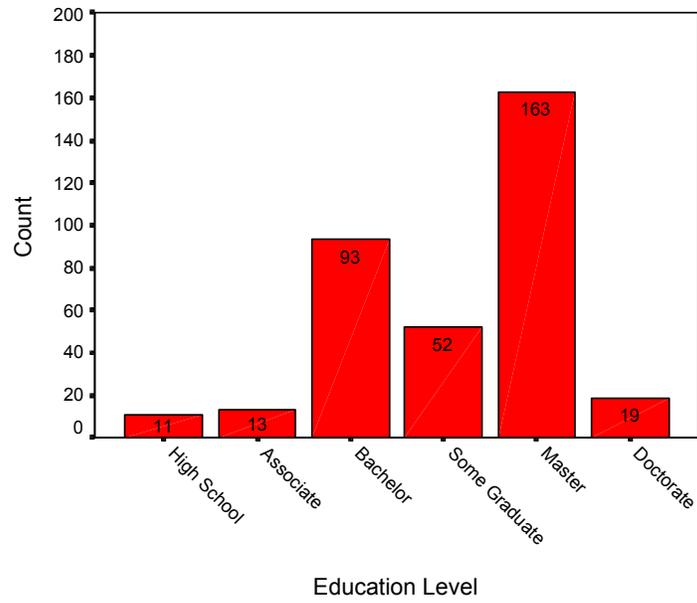


Figure IV-3: Frequency distribution of education level

The majority of the sample (78.8 percent) had worked for the organization 5 years or less (see Figure IV-4). The majority of participants in this study were in staff (44 percent) and management (44 percent) positions. Forty-one (12 percent) of the respondents were in top management positions (see Figure 4.5). Participants in this study were from the three teams that comprise the public sector business segment in the organization. Responses from Team 1 comprised 45 percent of the sample; Team 2 comprised 20 percent of the sample; and, Team 3 comprised 35 percent of the sample (see Figure IV-6). About a third of participants were located at the organization’s headquarters (32.8 percent), and 40.8 percent were off-site at a client location or other office building 5-days a week (see Figure IV-7).

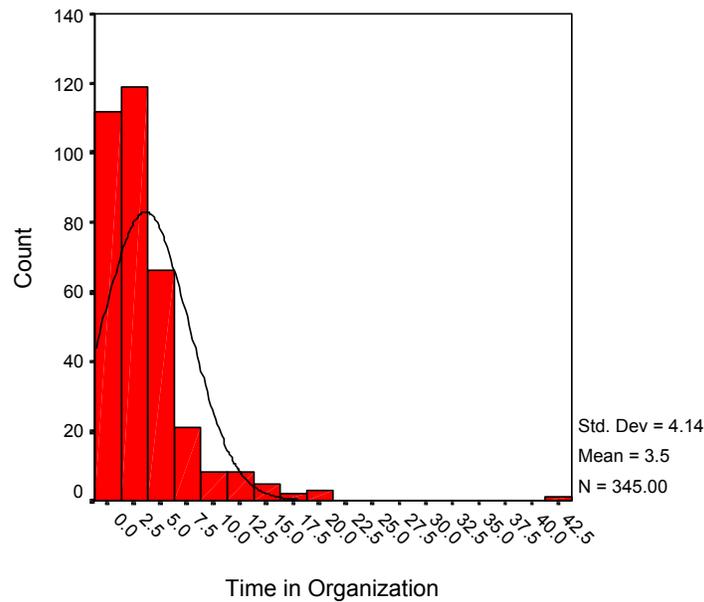


Figure IV-4: Frequency distribution of length of time in organization

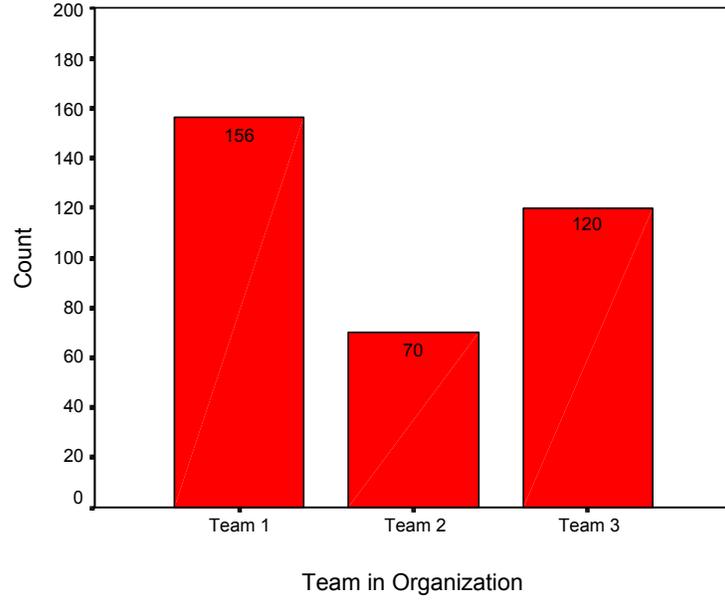


Figure IV-5: Frequency distribution of level in organization

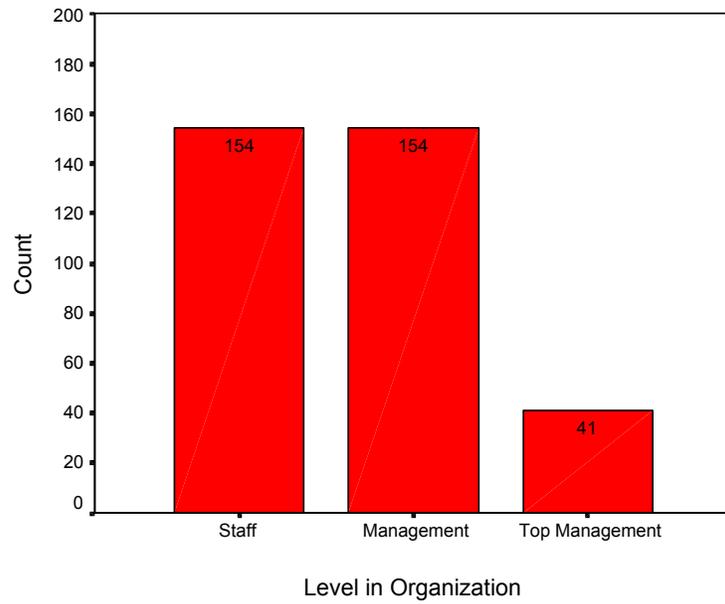


Figure IV-6: Frequency distribution of team in organization

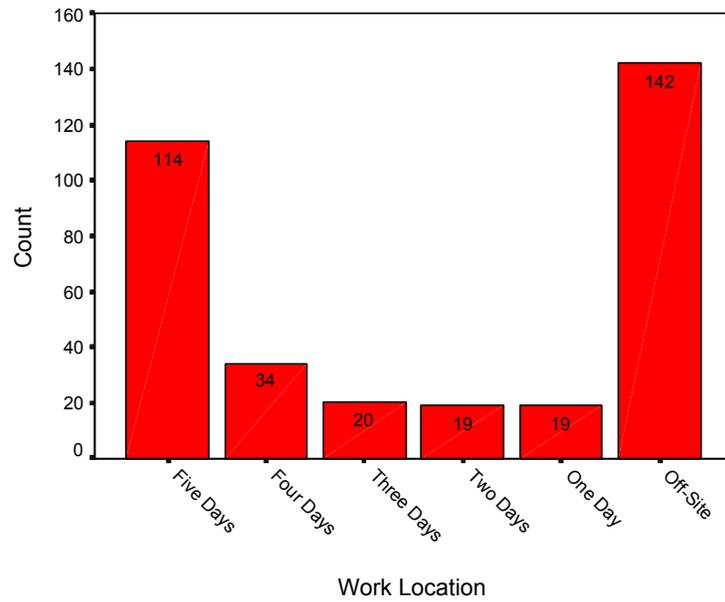


Figure IV-7: Frequency distribution of work location

## IV.2 Descriptive Analyses

The measures described in Chapter III were used in this study. Two trust scales—trust in supervisor and trust in organization—and one psychological sense of community measure were used for this study. The Cronbach alpha scores indicate that items used to construct the measures selected for this study were correlated. In this study, Cronbach’s alpha for trust in supervisor is .89 and trust in organization is .84. These scores are consistent with a recent study conducted by Ruder (2003). Ruder’s (2003) study yielded Cronbach alpha scores of .93 for trust in supervisor and .71 for trust in organization. The psychological sense of community in the workplace scale produces a .85 Cronbach alpha. The Cronbach alpha score from the current study is higher on the psychological sense of community scale than the score of .69 yielded in a previous study (Pretty and McCarthy, 1991).

There were 351 valid responses, with no missing data for any of the three subscales used in this study (see Table IV-1). The Trust in Supervisor subscale results in a mean of 4.04 and a standard deviation of .77; the Trust in Organization subscale yields a mean of 3.68 and a standard deviation of .74; and, the Psychological Sense of Community in the Workplace measure results in a mean of 3.71 and a standard deviation of .52. The descriptive statistics for physical proximity to others in the workplace displays similar means and standard deviations for each type of employee, with a slight increase in the mean for top management (see Table IV-2). Proximity to colleagues results in a mean of 2.06 and a standard deviation of 1.243; proximity to other colleagues yields a mean of 2.56 and a standard deviation of 1.222; proximity to immediate supervisor results in a mean of 2.22 and a standard deviation of 1.363; and, proximity to top management yields a mean of 3.23 and a standard deviation of 1.358.

Table IV-1

*Descriptive Statistics for the Two Trust Scales and One Psychological Sense of Community Measure*

	Valid N	Missing	Mean	SD
1. Trust in Supervisor	351	0	4.04	.77
2. Trust in Organization	351	0	3.68	.74
3. Psychological Sense of Community	351	0	3.71	.52

Frequency distributions for the physical proximity to others in the workplace reveal that 67 percent of respondents work very close or close to colleagues on team (see Table IV-3). The majority of respondents were situated very close or close (52 percent) to colleagues on other teams. Sixty-seven (67) percent of respondents were situated very close or close to their immediate supervisor. In contrast, a slight majority (51 percent) of respondents were situated distant or very distant from top management in the organization. These findings suggest that most employees were situated in very close or close in physical proximity to their immediate team (i.e., colleagues, other colleagues, and immediate supervisor) and very distant or distant from top management.

Table IV-2  
*Descriptive Statistics for Physical Proximity to Others in the Workplace*

	Colleagues	Other Colleagues	Immediate Supervisor	Top Management
Valid (N)	343	344	342	346
Missing (N)	8	7	9	5
Mean	2.06	2.56	2.22	3.23
Std. Deviation	1.243	1.222	1.363	1.358

Table IV-3  
*Frequency Distributions for Physical Proximity to Others in the Workplace*

	Colleagues	Other Colleagues	Immediate Supervisor	Top Management
	N (%)	N (%)	N (%)	N (%)
Very Close	163 (48%)	82 (24%)	149 (44%)	44 (13%)
Close	66 (19%)	95 (28%)	77 (23%)	80 (23%)
Some Close/Distant	63 (18%)	81 (24%)	36 (11%)	48 (14%)
Distant	31 (9%)	63 (18%)	51 (15%)	99 (29%)
Very Distant	20 (6%)	23 (7%)	29 (8%)	75 (22%)

The frequency distributions for amount of communication used through the four channels reveal that respondents from the sample in this work environment used paper communication relatively little compared with other forms. While face-to-face and e-mail were the primary means in which employees corresponded with others in the workplace, the amount of communication differed among the types of employee (i.e., colleagues, other colleagues, immediate supervisor, and top management) that were receiving and sending the communication. Respondents received and sent face-to-face communication with their colleagues and immediate supervisor more than with other colleagues and top management. For instance, approximately 42.5 percent of communication with colleagues and 36 percent of communication with immediate supervisor was through a great or very great amount of face-to-face while only 10.35 percent and 2.8 percent of communication with other colleagues and top management was through a great to a very great amount of face-to-face communication (see Tables IV-4 and IV-5). Similarly, 70.95 percent and 47.95 percent of communication with colleagues and immediate supervisor, respectively, was through a great to a very great amount of e-mail, while 37.6 percent and 11.9 percent used e-mail in communicating with other colleagues and top management (see Tables IV-10 and IV-11). Telephone use was more prevalent in communicating a great to a very great amount with colleagues (26 percent) than with the other types of employees (see Tables IV-6 and IV-7). Paper forms of communication appeared to be rare among all employee types (see Tables IV-8 and IV-9).

Table IV-4

*Frequency Distributions for Face-to-Face Communication Received from and Sent to Others in the Workplace*

	Colleagues		Other Colleagues		Immediate Supervisor		Top Management	
	R	S	R	S	R	S	R	S
Very Little	35	33	131	127	61	59	222	225
Little	47	40	82	82	54	54	47	40
Some	119	122	84	91	105	102	26	27
Great	102	108	29	29	77	81	4	5
Very Great	40	43	6	5	41	46	4	4

*Note.* R=Received from S=Sent to

Table IV-5

*Percentages for Face-to-Face Communication Received from and Sent to Others in the Workplace*

	Colleagues		Other Colleagues		Immediate Supervisor		Top Management	
	R	S	R	S	R	S	R	S
Very Little	10.2	9.5	39.5	38.0	18.0	17.3	73.3	74.8
Little	13.7	11.6	24.7	24.6	16.0	15.8	15.5	13.3
Some	34.7	35.3	25.3	27.2	31.1	29.8	8.6	9.0
Great	29.7	31.2	8.7	8.7	22.8	23.7	1.3	1.7
Very Great	11.7	12.4	1.8	1.5	12.1	13.5	1.3	1.3

*Note.* R=Received from S=Sent to

Table IV-6

*Frequency Distributions for Telephone Communication Received from and Sent to Others in the Workplace*

	Colleagues		Other Colleagues		Immediate Supervisor		Top Management	
	R	S	R	S	R	S	R	S
Very Little	39	40	112	109	88	91	220	225
Little	64	63	73	70	75	77	29	29
Some	150	153	96	102	100	101	16	17
Great	71	71	29	33	52	49	5	5
Very Great	19	18	12	11	22	24	3	3

*Note.* R=Received from S=Sent to

Table IV-7

*Percentages for Telephone Communication Received from and Sent to Others in the Workplace*

	Colleagues		Other Colleagues		Immediate Supervisor		Top Management	
	R	S	R	S	R	S	R	S
Very Little	11.4	11.6	34.8	33.5	26.1	26.6	80.6	80.6
Little	18.7	18.3	22.7	21.5	22.3	22.5	10.6	10.4
Some	43.7	44.3	29.8	31.4	29.7	29.5	5.9	6.1
Great	20.7	20.6	9.0	10.2	15.4	14.3	1.8	1.8
Very Great	5.5	5.2	3.7	3.4	6.5	7.0	1.1	1.1

*Note.* R=Received from S=Sent to

Table IV-8

*Frequency Distributions for Paper Communication Received from and Sent to Others in the Workplace*

	Colleagues		Other Colleagues		Immediate Supervisor		Top Management	
	R	S	R	S	R	S	R	S
Very Little	175	177	213	214	191	190	225	231
Little	67	69	63	62	59	58	38	31
Some	60	59	26	27	46	49	19	13
Great	17	19	7	7	14	14	1	1
Very Great	4	4	1	1	6	8	2	2

*Note.* R=Received from S=Sent to

Table IV-9

*Percentages for Paper Communication Received from and Sent to Others in the Workplace*

	Colleagues		Other Colleagues		Immediate Supervisor		Top Management	
	R	S	R	S	R	S	R	S
Very Little	54.2	54.0	68.7	68.8	60.4	59.6	78.9	83.1
Little	20.7	21.0	20.3	19.9	18.7	18.2	13.3	11.2
Some	18.6	18.0	8.4	8.7	14.6	15.4	6.7	4.7
Great	5.3	5.8	2.3	2.3	4.4	4.4	.4	.4
Very Great	1.2	1.2	.3	.3	1.9	2.5	.7	.7

*Note.* R=Received from S=Sent to

Table IV-10

*Frequency Distributions for E-Mail Communication Received from and Sent to Others in the Workplace*

	Colleagues		Other Colleagues		Immediate Supervisor		Top Management	
	R	S	R	S	R	S	R	S
Very Little	11	13	51	67	24	23	131	162
Little	17	17	67	66	39	40	83	65
Some	70	73	88	79	118	115	69	50
Great	128	128	76	76	93	98	26	18
Very Great	119	116	51	49	69	71	18	14

*Note.* R=Received from S=Sent to

Table IV-11

*Percentages for E-Mail Communication Received from and Sent to Others in the Workplace*

	Colleagues		Other Colleagues		Immediate Supervisor		Top Management	
	R	S	R	S	R	S	R	S
Very Little	3.2	3.7	15.3	19.9	7.0	6.6	40.1	52.4
Little	4.9	4.9	20.1	19.6	11.4	11.5	25.4	21.0
Some	20.3	21.0	26.4	23.4	34.4	33.1	21.1	16.2
Great	37.1	36.9	22.8	22.6	27.1	28.2	8.0	5.8
Very Great	34.5	33.4	15.3	14.5	20.1	20.5	5.5	4.5

*Note.* R=Received from S=Sent to

### IV.3 Bi-Variate Analyses

In examining the relationship between physical proximity to others and amount of communication through the four channels, gammas were used. The data yield significant relationships among all employee types for face-to-face communication (see Table IV-12), suggesting that employees who were located close in physical proximity used more face-to-face communication. There is a significant positive relationship between physical proximity and paper communication received from (.185) and sent to (.170) colleagues. E-mail communication and physical proximity to others did not show a statistically significant relationship among any of the employee types, indicating that physical proximity is not related to e-mail communication using the original data set.

Table IV-12  
*Gamma Values for Communication Received from and Sent to Others by Physical Proximity for the Four Channels (p value in parentheses)*

	Received from Others	Sent to Others
Colleagues		
• Face-to-Face	.449 (.000)	.467 (.000)
• Paper	.185 (.013)	.170 (.024)
• Telephone	.061 (.363)	.051 (.449)
• E-Mail	-.068 (.227)	.090 (.174)
Other Colleagues		
• Face-to-Face	.299 (.000)	.271 (.000)
• Paper	.050 (.540)	.021 (.800)
• Telephone	.027 (.675)	.016 (.806)
• E-Mail	.084 (.138)	.047 (.404)
Immediate Supervisor		
• Face-to-Face	.612 (.000)	.618 (.000)
• Paper	.104 (.180)	.087 (.259)
• Telephone	-.033 (.589)	-.065 (.282)
• E-Mail	.117 (.069)	.112 (.077)
Top Management		
• Face-to-Face	.309 (.000)	.279 (.001)
• Paper	.095 (.314)	.193 (.062)
• Telephone	.069 (.507)	.045 (.658)
• E-Mail	.092 (.136)	.061 (.374)

*Note.* These data reflect a scale for physical proximity from close to distant and amount of communication from high to low. The p-values reflected here, and throughout the remainder of this chapter, are a measure of probability that a difference between groups during an experiment happened by chance. The lower the p-value, the more likely it is that the difference between groups was caused by treatment.

However, gammas were run to examine the data by employment levels (i.e., staff, management, and top management) and to identify any similarities or differences between these groups. As with the entire sample, these gamma scores show some significant relationships between physical proximity and face-to-face communication. For instance, data for staff and management consistently yield significant gamma scores for physical proximity and face-to-face communication with colleagues, other colleagues, and immediate supervisor (see Tables IV-13 and IV-14). Data for top management only show significant gamma scores for physical proximity and face-to-face communication with the immediate supervisor. In contrast to the entire sample, these data indicate significant relationships between physical proximity and e-mail communication. Specifically, gamma scores are significant for top management receiving e-mail from other colleagues (.294), staff receiving e-mail from the immediate supervisor (.194), and management receiving e-mail from top management (.222). In sending communication, there are significant gamma scores for staff sending colleagues e-mail communication (.210) and management sending top management e-mail communication (.196).

The results suggest that face-to-face and e-mail communications are the primary means in which the employment types communicate with others in close proximity. Staff and management use more face-to-face communication with others who are located in close physical proximity, while top management tends to use face-to-face to communicate with their immediate supervisor when located in close physical proximity. All employment levels use e-mail to communicate with other employees in close physical proximity, suggesting that employees choose to use e-mail to communicate with employees who are located close to them.

Table IV-13

*Gamma Values for Communication Received from Others by Physical Proximity for Employment Levels (p value in parentheses)*

	Staff	Management	Top Management
Colleagues			
• Face-to-Face	.497 (.000)	.422 (.000)	.286 (.101)
• Paper	.252 (.026)	.135 (.226)	.156 (.481)
• Telephone	.120 (.259)	-.014 (.886)	.137 (.460)
• E-Mail	.194 (.068)	-.023 (.811)	.011 (.962)
Other Colleagues			
• Face-to-Face	.247 (.008)	.356 (.000)	.253 (.149)
• Paper	-.028 (.829)	.050 (.671)	.363 (.108)
• Telephone	.024 (.807)	.041 (.698)	.062 (.715)
• E-Mail	.066 (.428)	.107 (.245)	.294 (.051)
Immediate Supervisor			
• Face-to-Face	.639 (.000)	.625 (.000)	.445 (.015)
• Paper	.224 (.053)	-.043 (.713)	.165 (.462)
• Telephone	.076 (.418)	-.152 (.096)	-.022 (.909)
• E-Mail	.194 (.045)	.046 (.629)	.141 (.469)
Top Management			
• Face-to-Face	.253 (.069)	.448 (.000)	.183 (.427)
• Paper	.048 (.741)	.041 (.769)	.324 (.197)
• Telephone	-.125 (.498)	.282 (.046)	.075 (.725)
• E-Mail	-.052 (.584)	.222 (.017)	.229 (.115)

*Note.* These data reflect a scale for physical proximity from close to distant and amount of communication from high to low.

Table IV-14

*Gamma Values for Communication Sent to Others by Physical Proximity for Employment Levels (p value in parentheses)*

	Staff	Management	Top Management
Colleagues			
• Face-to-Face	.528 (.000)	.437 (.000)	.271 (.132)
• Paper	.236 (.041)	.116 (.301)	.146 (.512)
• Telephone	.060 (.574)	.010 (.920)	.188 (.323)
• E-Mail	.210 (.045)	-.007 (.945)	-.044 (.821)
Other Colleagues			
• Face-to-Face	.236 (.010)	.312 (.002)	.231 (.183)
• Paper	-.034 (.797)	.064 (.585)	.111 (.627)
• Telephone	-.004 (.971)	.048 (.637)	.121 (.457)
• E-Mail	.041 (.628)	.092 (.305)	.215 (.188)
Immediate Supervisor			
• Face-to-Face	.605 (.000)	.659 (.000)	.464 (.010)
• Paper	.182 (.114)	-.039 (.739)	.165 (.462)
• Telephone	-.011 (.909)	-.164 (.071)	.081 (.662)
• E-Mail	.157 (.100)	.050 (.596)	.252 (.206)
Top Management			
• Face-to-Face	.203 (.160)	.425 (.000)	.167 (.465)
• Paper	.125 (.425)	.178 (.244)	.434 (.122)
• Telephone	-.070 (.706)	.236 (.089)	-.035 (.864)
• E-Mail	-.067 (.538)	.196 (.055)	.116 (.500)

*Note.* These data reflect a scale for physical proximity from close to distant and amount of communication from high to low.

Additional gammas were run to examine the relationships between work location, education level, and the communication usage of the four channels (see Tables IV-15 and IV-16). The results show a significant positive relationship between e-mail communication and work location among all four types of employees, suggesting that employees who work closer to one another use more e-mail to communicate with others in the immediate workplace than those who are distant. For receiving e-mail communication, significant gamma scores between work location and amount of communication for colleagues (.180), other colleagues (.213), immediate supervisor (.202), and top management (.125), indicating that employees who work close to one another use e-mail. Similarly, the gammas between work location and e-mail communication sent to others are significant across all employee types, with the exception of top management. Significant gamma scores also result from the relationship of telephone communication and work location in receiving and sending to colleagues (.179 and .166) and immediate supervisor (.197 and .133), signifying that telephone is used to communicate with colleagues and immediate supervisor who work closer rather than distant in the workplace. Face-to-face communication and work location are only related for receiving from and sending to immediate supervisor (.130 and .172) and receiving communications from top management (.182). This finding may indicate that employees choose to use a more personalized form of communication, like face-to-face communications, when communicating with management that are in close proximity. Paper communication results in one significant gamma score of .231 in receiving from top management. Paper is used relatively little to communicate with others who work in close proximity. The relationship between education level and the use of the four communication channels is significant in only three cases—face-to-face communication received from (.146) and sent to (.140) immediate supervisor, and paper sent to (.158) immediate supervisor—indicating the those with more education use face-to-face and paper more to communicate with an immediate supervisor who works within close proximity than with those employees who are distant.

Table IV-15

*Gamma Values for Communication Received from and Sent to Others by Work Location for the Four Channels (p value in parentheses)*

	Received from Others	Sent to Others
Colleagues		
• Face-to-Face	.013 (.844)	.031 (.633)
• Paper	.007 (.929)	-.019 (.799)
• Telephone	.179 (.007)	.166 (.012)
• E-Mail	.180 (.007)	.162 (.015)
Other Colleagues		
• Face-to-Face	.073 (.274)	.077 (.242)
• Paper	.160 (.067)	.142 (.106)
• Telephone	.084 (.187)	.119 (.059)
• E-Mail	.213 (.000)	.178 (.003)
Immediate Supervisor		
• Face-to-Face	.130 (.041)	.172 (.006)
• Paper	.037 (.649)	.010 (.901)
• Telephone	.197 (.002)	.133 (.042)
• E-Mail	.202 (.002)	.191 (.003)
Top Management		
• Face-to-Face	.182 (.044)	.161 (.077)
• Paper	.231 (.034)	.171 (.172)
• Telephone	.153 (.159)	.129 (.232)
• E-Mail	.125 (.055)	.058 (.418)

*Note.* These data reflect a scale for work location from close to distant and amount of communication from high to low.

Table IV-16

*Gamma Values for Communication Received from and Sent to Others by Education Level for the Four Channels (p value in parentheses)*

	Received from Others	Sent to Others
Colleagues		
• Face-to-Face	.047 (.463)	.039 (.533)
• Paper	.139 (.062)	.140 (.058)
• Telephone	-.039 (.568)	-.076 (.257)
• E-Mail	-.057 (.396)	-.025 (.701)
Other Colleagues		
• Face-to-Face	.034 (.609)	.018 (.782)
• Paper	.136 (.125)	.148 (.096)
• Telephone	-.048 (.497)	-.069 (.324)
• E-Mail	-.012 (.857)	-.015 (.808)
Immediate Supervisor		
• Face-to-Face	.146 (.018)	.140 (.020)
• Paper	.107 (.150)	.158 (.031)
• Telephone	-.015 (.817)	.004 (.944)
• E-Mail	.040 (.511)	.056 (.350)
Top Management		
• Face-to-Face	.004 (.963)	-.070 (.480)
• Paper	.020 (.855)	.049 (.702)
• Telephone	-.155 (.192)	-.099 (.408)
• E-Mail	-.040 (.567)	-.063 (.410)

*Note.* These data reflect a scale for education level from less to more years and amount of communication from low to high.

The two trust scales and the one psychological sense of community measure were related (see Table IV-17). The correlation between trust in supervisor and trust in organization results in a Pearson's  $r$  of .532, which is significant at the .01 level. Trust in supervisor and trust in organization are significantly correlated with the psychological sense of community scale with a Pearson's  $r$  of .500 and .586. These scores are both significant at the .01 level. Gender is significantly correlated with the trust in organization subscale (-.134) at the .05 level, and the psychological sense of community measure (-.138) at the .01 level. This finding suggests that males have slightly more trust in organization and psychological sense of community in the workplace than females. A t-test confirmed that males have significantly more trust in organization ( $p=.013$ ) and psychological sense of community ( $p=.010$ ) than females. The psychological sense of community measure and time in organization yields a significant Pearson's  $r$  of .123, indicating that employees with more time in the organization have a greater sense of community than those employees with less time in organization.

Table IV-17  
*Correlations of Scales and Selected Demographic Data*

	Trust in Org	PSOC	Gender	Age	Time in Org	Education Level
Trust in Supervisor	.532**	.500**	-.083	.026	.049	.036
Trust in Organization		.586**	-.134*	.070	-.034	.024
Psychological SOC			-.138**	.041	.123*	-.032

\* $p<.05$ . \*\* $p<.01$ .

One-way ANOVAs were performed to test for significant differences between means in the data set. The ANOVAs were aimed at examining the means of the two trust subscales and the one psychological sense of community measure with regard to physical proximity for each of the four types of employees (i.e., colleagues, other colleagues, immediate supervisor, and top management). Separate ANOVAs were performed with the scales as the dependent variables

and physical proximity (i.e., very close, close, some close/distant, distant, very distant) for each type of employee served as the grouping variable. The results yielded no significant findings.

After the initial bi-variate analyses were completed, several of the demographic variables were recoded to facilitate further analyses. The three demographic items that were recoded were age of respondents, time in organization, and education level. Given the skewed nature of its distribution, the age of respondents was recoded to form three age groupings (see Figure IV-8). The first category included respondents between the ages of 21 and 30, the second category included respondents between the ages of 31 and 45, and the third category were respondents between the ages of 46 and 68. Because a limited number of respondents had worked in the organization for more than 7 years, time in organization was recoded and grouped into eight categories (see Figure IV-9). Education level was recoded into two categories (see Figure IV-10). Respondents with 12 to 16 years of education (high school through bachelor's degree) were grouped into one category, and respondents with more than a bachelor's degree were grouped into another category (Some Graduate to Doctorate).

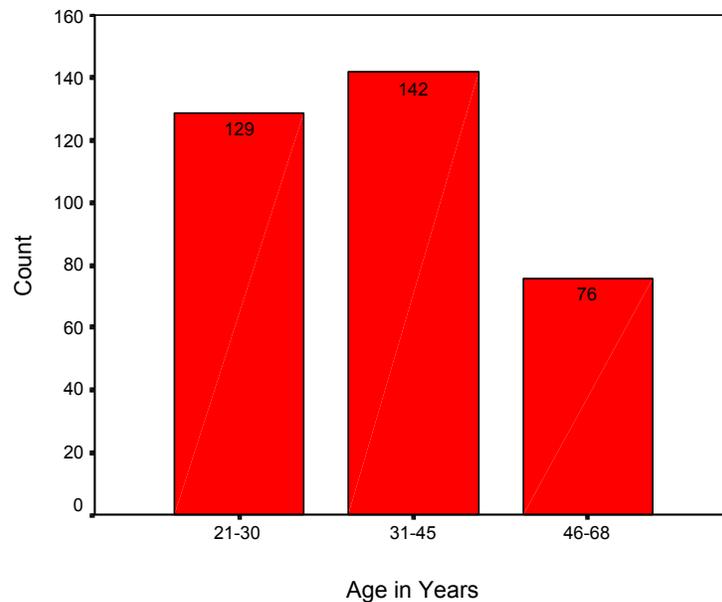


Figure IV-8: Recoded data for age in years

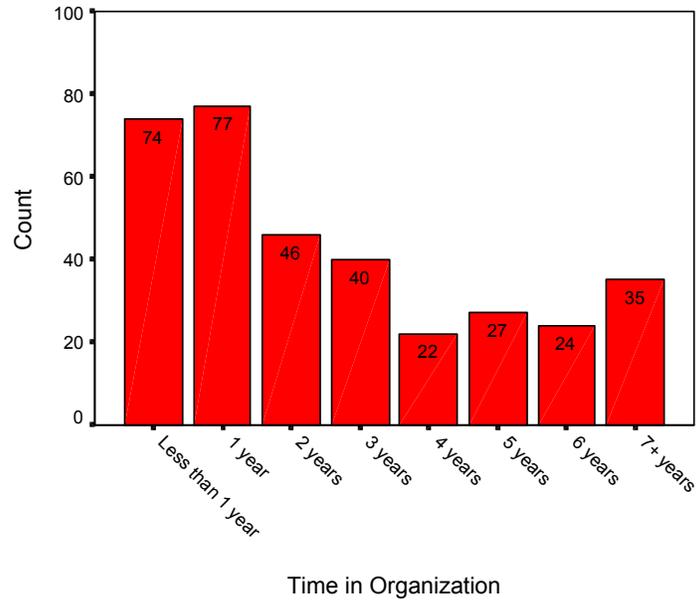


Figure IV-9: Recoded data for time in organization

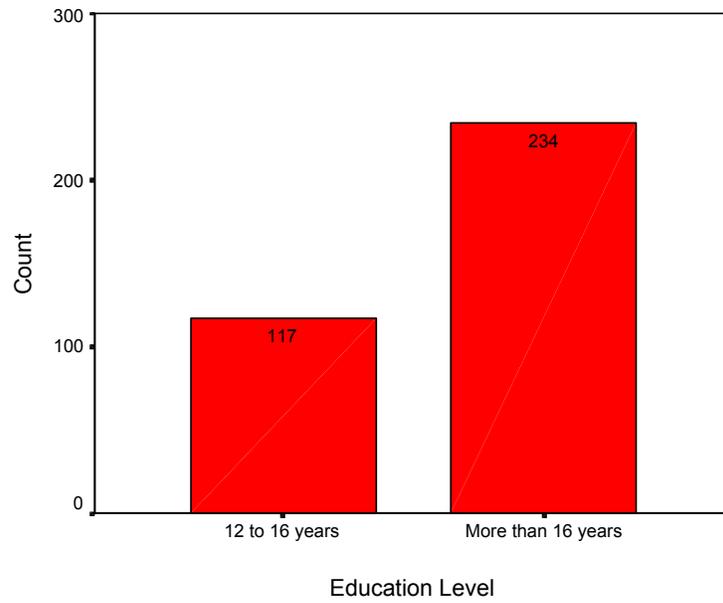


Figure IV-10: Recoded data for education level

Once the three demographic data categories were recoded, new gammas were performed to examine the relationship between the four channels of communication and each demographic category (see Tables IV-18 and IV-19). The data yields several significant relationships. Age is significantly related to face-to-face communication received from (-.181) and sent to (-.155) colleagues as well as face-to-face communication received from (-.151) and sent to (-.147) immediate supervisor. Similarly, e-mail communication received from (-.268) and sent to (-.280) colleagues yields significant gammas as does e-mail communication received from (-.174) and sent to (-.190) immediate supervisor. These findings suggest that younger employees use more face-to-face and e-mail to communicate with their colleagues and immediate supervisor than do their older counterparts. Time in organization is also related to e-mail communication. For instance, time in organization yields significant gamma scores for e-mail communication received from (.108) immediate supervisor and e-mail communication received from (.165) and sent to (.165) top management, suggesting that employees with more time in the organization use more e-mail to communicate with immediate supervisor and top management. Use of telephone communication is significant with time in organization for communications sent to immediate supervisor (.105). Education only yields one significant gamma—the relationship of paper communication sent to (-.239) other colleagues, indicating that paper is used relatively little in the organization to communicate with others. In addition to the gammas, one-way ANOVAs were performed to examine the relationship between recoded age, time in organization, and education and the three scales. These ANOVAs yielded no significant results.

Table IV-18

*Gamma Values for Communication Received from Others and Recoded Age, Education, and Time in Organization (p value in parentheses)*

	Age	Education	Time in Organization
Colleagues			
• Face-to-Face	-.181 (.006)	-.017 (.849)	.018 (.736)
• Paper	.053 (.498)	-.105 (.300)	-.097 (.116)
• Telephone	-.094 (.174)	-.009 (.924)	.064 (.229)
• E-Mail	-.268 (.000)	.003 (.722)	.032 (.574)
Other Colleagues			
• Face-to-Face	-.047 (.501)	-.061 (.500)	-.060 (.287)
• Paper	-.014 (.875)	-.222 (.060)	-.122 (.096)
• Telephone	.018 (.803)	-.026 (.780)	.083 (.131)
• E-Mail	-.043 (.518)	-.043 (.617)	.093 (.062)
Immediate Supervisor			
• Face-to-Face	-.151 (.018)	-.134 (.112)	.043 (.402)
• Paper	-.026 (.750)	-.028 (.791)	-.007 (.913)
• Telephone	-.105 (.124)	.033 (.701)	.115 (.028)
• E-Mail	-.174 (.009)	-.059 (.488)	.108 (.035)
Top Management			
• Face-to-Face	.058 (.564)	-.027 (.833)	.061 (.442)
• Paper	-.036 (.748)	-.030 (.834)	.054 (.542)
• Telephone	.185 (.123)	.083 (.588)	.135 (.157)
• E-Mail	.022 (.752)	-.012 (.898)	.165 (.002)

Table IV-19

*Gamma Values for Communication Sent to Others and Recoded Age, Education, and Time in Organization (p value in parentheses)*

	Age	Education	Time in Organization
Colleagues			
• Face-to-Face	-.155 (.019)	-.023 (.788)	.019 (.720)
• Paper	.065 (.398)	-.101 (.317)	-.091 (.132)
• Telephone	-.086 (.215)	.024 (.792)	.048 (.375)
• E-Mail	-.280 (.000)	-.001 (.992)	.012 (.824)
Other Colleagues			
• Face-to-Face	-.042 (.555)	-.044 (.624)	-.077 (.169)
• Paper	.009 (.924)	-.239 (.043)	-.109 (.138)
• Telephone	.038 (.598)	-.022 (.812)	.071 (.195)
• E-Mail	-.025 (.706)	-.025 (.765)	.090 (.061)
Immediate Supervisor			
• Face-to-Face	-.147 (.021)	-.138 (.099)	.039 (.422)
• Paper	-.033 (.689)	-.096 (.353)	-.036 (.581)
• Telephone	-.105 (.125)	-.005 (.952)	.105 (.047)
• E-Mail	-.190 (.004)	-.076 (.369)	.086 (.099)
Top Management			
• Face-to-Face	.059 (.557)	.048 (.713)	.112 (.157)
• Paper	-.021 (.874)	-.048 (.766)	-.039 (.697)
• Telephone	.171 (.143)	.036 (.811)	.179 (.054)
• E-Mail	.040 (.598)	.043 (.665)	.165 (.007)

One-way ANOVAs were performed for the three scales using selected demographic variables (including recoded data), resulting in four significant relationships (see Table IV-20). Trust in supervisor is significantly related to team in organization (.030), trust in organization is significantly related to gender (.013), and psychological sense of community in the workplace was significantly related to gender (.010) and level in organization (.008). Tests for linear trends using the polynomial option were performed on the ordered categories (i.e., age, time in organization, level in organization, and education). Level in organization and the psychological sense of community results in a significant linear trend (.003), suggesting that as employees move up in the organization so does their sense of community. This trend may also be true with trust in organization (.060). Tukey’s Honestly Significantly Different (HSD) post-hoc tests were performed to determine the degree of difference between each significant relationship. Team 1 and Team 2 have significantly more trust in supervisor than Team 3, males have significantly more trust in organization than females, males have significantly more psychological sense of community in the workplace than females, and top management have significantly more psychological sense of community in the workplace than staff and management (see Table IV-21). These findings may suggest that some organization and team culture issues exist that could influence the feelings of trust and psychological sense of community in the workplace.

Table IV-20  
*ANOVAs for Trust in Supervisor, Trust in Organization, and Psychological Sense of Community in the Workplace by Demographic Variables (p values shown)*

	Trust in Supervisor		Trust in Organization		Psychological SOC	
	ANOVA	Linear Trend	ANOVA	Linear Trend	ANOVA	Linear Trend
Gender	.123	-	.013**	-	.010**	-
*Age	.762	.827	.607	.334	.318	.242
*Time in Organization	.621	.351	.864	.478	.669	.253
Level in Organization	.317	.152	.169	.060	.008**	.003**
Team within Organization	.030**	-	.063	-	.749	-
*Education Level	.438	.438	.905	.905	.669	.669
Work Location	.628	-	.805	-	.716	-

*Note.* \*Denotes recoded data. \*\*Significant. For education, the ANOVA and Linear Trend resulted in the same p value because education was recoded into two categories.

Table IV-21

*Mean Differences for the Significant Relationships in Trust in Supervisor, Trust in Organization, and Psychological Sense of Community in the Workplace by Demographic Variables*

Dependent Variable	(I)	(J)	Mean Difference (I-J)
Trust in Supervisor	Team 3	Team 1	-.2183*
		Team 2	-.2473*
Trust in Organization	Male	Female	.1991
PSOC	Male	Female	.1462
	Top Management	Staff Management	.2690* .2714*

Note. \*The mean difference is significant at the .05 level.

Because the initial gammas and frequency distributions of the four communication media revealed that communications received from and sent to others yielded similar values, these two scores were combined to form one total volume of communication score for each medium. Descriptive statistics for the new communication scores consistently show that e-mail communication is the most used communication channel across the four media (see Table IV-22). Face-to-face communication is the next most used form of communication. Colleagues have the highest means for e-mail and face-to-face communication among the four types of employees. Relatively little communication occurs with top management.

Table IV-22

*Descriptive Statistics for Total Volume of Communication Across the Four Media*

	Mean	Standard Deviation
Colleagues		
• Face-to-Face	3.2193	1.10988
• Paper	1.7960	1.01153
• Telephone	2.8980	1.00216
• E-Mail	3.9290	1.01014
Other Colleagues		
• Face-to-Face	2.0997	1.06060
• Paper	1.4511	0.76112
• Telephone	2.2641	1.11900
• E-Mail	2.9745	1.28186
Immediate Supervisor		
• Face-to-Face	2.9762	1.24686
• Paper	1.6937	0.99791
• Telephone	2.5208	1.19433
• E-Mail	3.4257	1.11980
Top Management		
• Face-to-Face	1.4181	0.80839
• Paper	1.2637	0.59102
• Telephone	1.3242	0.75746
• E-Mail	2.0230	1.09925

One-way ANOVAs were performed to examine the total communication volumes by physical proximity, work location, gender, age, time in organization, employment level, team in organization, and education level. After the ANOVAs were completed, significant relationships were identified. Tukey’s HSD post-hoc tests were performed to determine the degree of difference between each significant relationship. The following several pages detail the findings of these ANOVAs with HSD post-hoc tests.

Total volume of face-to-face communication by physical proximity is significant across the four types of employees (see Table IV-23). Physical proximity does appear to relate to the total volume of face-to-face communication as evidenced in the mean differences across the four types of employees (see Table IV-24). Employees who are located closer in physical proximity to others in the workplace use significantly more face-to-face communication relative to other media.

Table IV-23  
*ANOVAs for Total Communication Volume by Physical Proximity (p values shown)*

	Colleagues	Other Colleagues	Immediate Supervisor	Top Management
Face-to-Face	.000*	.000*	.000*	.006*
Paper	.071	.071	.171	.385
Telephone	.113	.001*	.678	.474
E-Mail	.089	.285	.022*	.344

*Note.* \* Significant

Table IV-24

*Mean Differences for the Significant Relationships in Total Communication Volume by Physical Proximity*

Dependent Variable	(I) Proximity	(J) Proximity	Mean Difference (I-J)
<b>Colleagues</b>			
Face-to-Face	Very Distant	Very Close	-1.4441*
		Close	-1.0196*
		Some Close/Distant	-.8368*
		Distant	-.1863
<b>Other Colleagues</b>			
Face-to-Face	Very Distant	Very Close	-.9170*
		Close	-.3910
		Some Close/Distant	-.4605
		Distant	-.0224
<b>Immediate Supervisor</b>			
Face-to-Face	Very Distant	Very Close	-2.1419*
		Close	-1.4905*
		Some Close/Distant	-1.3242*
		Distant	-.5072
<b>Top Management</b>			
Face-to-Face	Very Distant	Very Close	-.6121*
		Close	-.3113*
		Some Close/Distant	-.3025
		Distant	-.2609

*Note.* \* The mean difference is significant at the .05 level. For colleagues, other colleagues, and immediate supervisor, a significant HSD is found between very close and all the other physical distances.

Total volume of face-to-face communication by work location is significant for communicating with immediate supervisor (see Table IV-25). E-mail communication by work location yields significant results for communicating with colleagues, other colleagues, and immediate supervisor. More e-mail is used to communicate with other colleagues and immediate supervisor by those employees located at headquarters versus those located entirely off-site (see Table IV-26). The same may be true when communicating with colleagues. Similarly, employees who are located at headquarters, rather than entirely off-site, may use more face-to-face communication in interacting with their immediate supervisor.

Table IV-25

*ANOVAs for Total Communication Volume by Work Location (p values shown)*

	Colleagues	Other Colleagues	Immediate Supervisor	Top Management
Face-to-Face	.618	.903	.026*	.689
Paper	.120	.502	.248	.123
Telephone	.103	.770	.054	.725
E-Mail	.012*	.010*	.009*	.261

*Note.* \* Significant

Table IV-26

*Mean Differences for the Significant Relationships in Total Communication Volume by Work Location*

Dependent Variable	(I) Work Location	(J) Work Location	Mean Difference (I-J)
<b>Other Colleagues</b>			
E-Mail	Off-Site 5-days	HQ 5-days	-.5269*
		HQ 4-days	-.6006
		HQ 3-days	-.6582
		HQ 2-days	-.5687
		HQ 1-day	-.4372
<b>Immediate Supervisor</b>			
E-Mail	Off-Site 5-days	HQ 5-days	-.4922*
		HQ 4-days	-.1548
		HQ 3-days	-.1665
		HQ 2-days	-.6777
		HQ 1-day	-.2888

*Note.* \* The mean difference is significant at the .05 level.

In examining total communication volume by gender, the total volume of telephone communication is the only significant relationship (see Table IV-27), revealing that females tend to use significantly more telephone communication with colleagues than males (see Table IV-28).

Table IV-27

*ANOVAs for Total Communication Volume by Gender (p values shown)*

	Colleagues	Other Colleagues	Immediate Supervisor	Top Management
Face-to-Face	.754	.824	.208	.810
Paper	.629	.809	.627	.759
Telephone	.052*	.988	.731	.535
E-Mail	.131	.539	.987	.548

*Note.* \* Significant

Table IV-28

*Mean Difference for the Significant Relationship in Total Communication Volume by Gender*

Dependent Variable	(I) Gender	(J) Gender	Mean Difference (I-J)
<b>Colleagues</b>			
Telephone	Male	Female	-.2168

Age is significantly related to the total volume of e-mail communication for colleagues and immediate supervisor (see Table IV-29). Employees between the ages of 46 and 68 years use significantly less e-mail to communicate with colleagues and immediate supervisor than their younger counterparts (see Table IV-30).

Table IV-29

*ANOVAs for Total Communication Volume by Age (p values shown)*

	Colleagues	Other Colleagues	Immediate Supervisor	Top Management
Face-to-Face	.057	.601	.069	.704
Paper	.599	.765	.840	.860
Telephone	.318	.342	.079	.287
E-Mail	.000*	.393	.007*	.290

*Note.* \* Significant

Table IV-30

*Mean Differences for the Significant Relationships in Total Communication Volume by Age*

Dependent Variable	(I) Age	(J) Age	Mean Difference (I-J)	
<b>Colleagues</b>	E-Mail	46-68 years	21-30 years	-.5696*
			31-45 years	-.4617*
<b>Immediate Supervisor</b>	E-Mail	46-68 years	21-30 years	-.4633*
			31-45 years	-.4459*

*Note.* \* The mean difference is significant at the .05 level.

Total communication volume by time in organization did not yield any significant findings (see Table IV-31).

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Table IV-31  
*ANOVAs for Total Communication Volume by Time in Organization (p values shown)*

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	Colleagues	Other Colleagues	Immediate Supervisor	Top Management
Face-to-Face	.967	.242	.586	.906
Paper	.198	.511	.500	.299
Telephone	.983	.418	.523	.679
E-Mail	.909	.555	.357	.085

---

Total volume of communication by employment level yields in three significant findings (see Table IV-32). Top management uses more e-mail to communicate with other colleagues than the staff and management (see Table IV-33). Top management also uses more telephone and e-mail to communicate with other top management employees than do staff and management.

Table IV-32

*ANOVAs for Total Communication Volume by Employment Level (p values shown)*

	Colleagues	Other Colleagues	Immediate Supervisor	Top Management
Face-to-Face	.916	.904	.315	.073
Paper	.095	.608	.080	.797
Telephone	.288	.014	.138	.001*
E-Mail	.154	.002*	.208	.000*

*Note.* \* Significant

Table IV-33

*Mean Differences for the Significant Relationships in Total Communication Volume by Employment Level*

Dependent Variable	(I) Employment Level	(J) Employment Level	Mean Difference (I-J)
<b>Other Colleagues</b>			
E-Mail	Top Management	Staff	.8065*
		Management	.6010*
<b>Top Management</b>			
Telephone	Top Management	Staff	.5341*
		Management	.4637*
E-Mail	Top Management	Staff	1.0023*
		Management	.8556*

*Note.* \* The mean difference is significant at the .05 level.

Total communication volume by team in organization yields three significant findings (see Table IV-34). Team 1 members use significantly more e-mail and paper to communicate with their immediate supervisor and top management than Team 3 (Table IV-35). Team 1 may also communicate over the telephone more than Team 3.

Table IV-34

*ANOVAs for Total Communication Volume by Team in Organization (p values shown)*

	Colleagues	Other Colleagues	Immediate Supervisor	Top Management
Face-to-Face	.649	.256	.230	.166
Paper	.858	.166	.514	.031*
Telephone	.520	.388	.047*	.072
E-Mail	.164	.454	.039*	.622

*Note.* \* Significant

Table IV-35

*Mean Differences for the Significant Relationships in Total Communication Volume by Team in Organization*

Dependent Variable	(I) Team	(J) Team	Mean Difference (I-J)
<b>Immediate Supervisor</b>	Team 3	Team 1	-.3298*
		Team 2	-.0599
<b>Top Management</b>	Team 3	Team 1	-.1965*
		Team 2	-.2024

*Note.* \* The mean difference is significant at the .05 level.

Total communication volume by education level yields one significant finding (see Table IV-36). Employees with 12-16 years of education use significantly more paper to communicate with other colleagues than those employees with 16 or more years of education (see Table IV-37).

Table IV-36  
*ANOVAs for Total Communication Volume by Education Level (p values shown)*

	Colleagues	Other Colleagues	Immediate Supervisor	Top Management
Face-to-Face	.877	.440	.092	.464
Paper	.067	.014*	.281	.496
Telephone	.948	.576	.786	.976
E-Mail	.377	.799	.611	.841

*Note.* \* Significant

Table IV-37  
*Mean Difference for the Significant Relationship in Total Communication Volume by Education Level*

Dependent Variable	(I) Education Level	(J) Education Level	Mean Difference (I-J)
<b>Other Colleagues</b>			
Paper	12-16 years	16 or more years	.2297

Correlations of the three scales and total volume of communication yields significant scores for face-to-face, telephone, and e-mail communications and the psychological sense of community in the workplace measure across the four types of employees (see Tables IV-38—IV-41). The total volume of communication through these three channels is also significantly related to trust in supervisor (see Table IV-40). These findings suggest that the regular use of face-to-face, telephone, and e-mail may relate to trust in supervisor and sense of community in the workplace. Telephone and e-mail communication are significantly related to trust in organization for immediate supervisor. Interestingly, all forms of communication media are significantly related to the three scales for top management (see Table IV-41). This finding may indicate that members of top management already has a high degree of trust and sense of community and, because of the nature of their position, communicate more through all communication channels.

The total volume of communication across the four media for each employment type was summed to create one communication variable for each employment type. Correlations conducted with the sum total of all communication channels by type of employee revealed a significant relationship to psychological sense of community in the workplace across each type of employee (see Table IV-42). The sum total of the communications across the four media by top management results in significant findings across all three scales. This may suggest that more communication in general rather than the type of communication medium is related to organizational trust and psychological sense of community, particularly in receiving from and sending communication to top management.

Table IV-38

*Correlations of Trust in Supervisor, Trust in Organization, and Psychological Sense of Community in the Workplace by Total Volume of Communication for Colleagues*

	Face-to-Face	Paper	Telephone	E-Mail
Trust in Supervisor	.083	.002	.054	.094
Trust in Organization	.065	-.024	.091	.059
Psychological SOC	.138*	-.022	.140*	.162*

\*p<.05. \*\*p<.01.

Table IV-39

*Correlations of Trust in Supervisor, Trust in Organization, and Psychological Sense of Community in the Workplace by Total Volume of Communication for Other Colleagues*

	Face-to-Face	Paper	Telephone	E-Mail
Trust in Supervisor	-.024	-.008	-.013	.055
Trust in Organization	.013	-.075	.037	.041
Psychological SOC	.116*	.009	.146*	.156**

\*p<.05. \*\*p<.01.

Table IV-40

*Correlations of Trust in Supervisor, Trust in Organization, and Psychological Sense of Community in the Workplace by Total Volume of Communication for Immediate Supervisor*

	Face-to-Face	Paper	Telephone	E-Mail
Trust in Supervisor	.241**	.097	.267**	.248**
Trust in Organization	.056	-.002	.127*	.142**
Psychological SOC	.156**	.010	.204**	.170**

\*p<.05. \*\*p<.01.

Table IV-41

*Correlations of Trust in Supervisor, Trust in Organization, and Psychological Sense of Community in the Workplace by Total Volume of Communication for Top Management*

	Face-to-Face	Paper	Telephone	E-Mail
Trust in Supervisor	.130*	.181*	.126*	.137*
Trust in Organization	.200**	.152*	.152*	.171**
Psychological SOC	.257**	.145*	.205**	.208**

\*p<.05. \*\*p<.01.

Table IV-42

*Correlations of Trust in Supervisor, Trust in Organization, and Psychological Sense of Community and the Sum of Total Communications Among All Four Communication Media by Employment Level*

	Colleagues-S	Other Colleagues-S	Immediate Supervisor-S	Top Management-S
Trust in Supervisor	.090	.013	.299**	.182**
Trust in Organization	.061	.014	.098	.193**
Psychological SOC	.139*	.150**	.194**	.233**

*Note.* S denotes sum of total communications among all four communication channels. \*p<.05. \*\*p<.01.

While the sum of total communications among the four media results in significant relationships with the three scales, the primary focus of this research was to examine e-mail communication. It would be difficult to state a priori the causal direction in the relationship between total communication and the dependent variables therefore a communication ratio was created to examine the relationship of e-mail versus the three remaining communication channels. The communication ratio formula consisted of total e-mail communication in the numerator and the mean of total face-to-face, paper, and telephone communication in the denominator, divided by three (see Figure IV-11). No direct measure of the proportion of total communication accounted for by e-mail was available, because the bottom and top categories on the ordinal scales measuring the amounts of communication were unbounded. Thus, this ratio was chosen because it provided the best measure of the relative importance of e-mail communication to the other forms of communication. The aim was to further examine the relationship of e-mail to organizational trust and psychological sense of community in the workplace.

$$\frac{\text{Total E-Mail Communication}}{\text{Mean of (Total Face-to-Face + Total Paper + Total Telephone Communication)}} = \text{Communication Ratio}$$

Figure IV-11: Communication ratio formula

The descriptive statistics for the communication ratio among the four types of employees reveal similar values that ranged from 1.4831 to 1.6314 (see Table IV-43), indicating that e-mail is used 50 percent more than other media. Correlations of the three scales by the communication ratio yield no significant findings, suggesting that the use of more e-mail communication over the remaining three channels is not related to trust in supervisor, organization, and psychological sense of community in the workplace (see Table IV-44).

Table IV-43  
*Descriptive Statistics for Communication Ratio Among the Four Types of Employees*

	Mean	Standard Deviation
Colleagues	1.5618	.47284
Other Colleagues	1.6314	.63936
Immediate Supervisor	1.4831	.41963
Top Management	1.6268	.76781

Table IV-44  
*Correlations of Trust in Supervisor, Trust in Organization, and Psychological Sense of Community in the Workplace by Communication Ratios*

	Colleagues-R	Other Colleagues-R	Immediate Supervisor-R	Top Management-R
Trust in Supervisor	.016	.085	-.038	.016
Trust in Organization	.039	.043	.082	.042
Psychological SOC	.033	.014	-.010	.036

\*p<.05. \*\*p<.01.

However, in using the communication ratio to examine the relationship between selected demographic variables, six significant relationships and several significant linear trends were found (see Table IV-45). While the Tukey’s HSD post-hoc did not reveal significant differences in the age groups (see Table IV-46), a significant linear trend is found for the communication ratio for colleagues. This finding indicates that as one’s age increases, so does their communication with colleagues via e-mail. Top management uses more e-mail to communicate with other colleagues and top management than staff, and more e-mail to communicate with top management than management. Two linear trends are also found with time in organization and level in organization. As both increase, so does the communication ratio for other colleagues and top management. Employees located at headquarters tend to use more e-mail to communicate with other colleagues than their off-site counterparts.

Table IV-45  
*ANOVAs for Communication Ratio by Demographic Variables (p value shown)*

	Colleagues-R		Other Colleagues-R		Immediate Supervisor-R		Top Management-R	
	ANOVA	Linear Trend	ANOVA	Linear Trend	ANOVA	Linear Trend	ANOVA	Linear Trend
Gender	.562	-	.999	-	.379	-	.547	-
Age	.043*	.022*	.591	.804	.522	.506	.522	.922
Time in Organization	.633	.793	.033*	.045*	.703	.720	.007*	.001*
Level in Organization	.540	.613	.012*	.003*	.729	.499	.007*	.002*
Team within Organization	.730	-	.918	-	.876	-	.479	-
Education Level	.412	.412	.318	.318	.994	.994	.450	.450
Work Location	.123	-	.012*	-	.836	-	.353	-

*Note.* R denotes communication ratio. \*Significant. For education, the ANOVA and Linear Trend resulted in the same p value because education was recoded into two categories.

Table IV-46

*Mean Differences for the Significant Relationships in the Communication Ratio by Demographic Variables*

Dependent Variable	(I)	(J)	Mean Difference (I-J)	
Colleagues-R	46-68 years	21-30 years	-.1668	
		31-45 years	-.1599	
Other Colleagues-R	7 years or more	Less than 1 year	.3122	
		1 year	.3747	
		2 years	-.0330	
		3 years	.2960	
		4 years	.1363	
		5 years	.1621	
		6 years	.1651	
		Top Management	Staff	.3455*
			Management	.2538
		Off-Site 5-days	HQ 5-days	-.1764
			HQ 4-days	-.2824
			HQ 3-days	-.2838
			HQ 2-days	-.4488
			HQ 1-day	-.3547
		Top Management-R	7 years or more	Less than 1 year
1 year	.6368*			
2 years	.6778*			
3 years	.6881*			
4 years	.5712			
5 years	.1590			
6 years	.4876*			
Top Management	Staff			.4686*
	Management			.3644*

*Note.* R denotes communication ratio. \*The mean difference is significant at the .05 level.

#### **IV.4 Analyses with Multiple Independent Variables**

The GLM was selected to perform the analyses between multiple important variables in this study. This model underlies most of the statistical analyses that are used in applied and social research like t-tests, ANOVA, Analyses of Covariance, and regression analyses. Unlike multiple regression analysis, GLM allows for the simultaneous presentation of results for continuous and categorically independent variables. The purpose of using the GLM was to draw inferences about which independent variables were related to the communication ratios as well as trust and psychological sense of community in the workplace. The Type III sum of square option in GLM, which was used here, adjusts a term's sum of squares for the contributions of all other terms. In other words, each term's effect is as if it is entered last into the model.

The first set of models attempted to explain the variance in the communication ratios for each of the employment types (see Table IV-47). Given the theory being tested, the ratios were considered important intermediate variables for explaining a respondent's level of trust and psychological sense of community. In the second set of models, the two trust scales and the psychological sense of community measure served as the dependent variables and were hypothesized to be related to the ratios (see Table IV-48). Thus, seven models were examined—four in the first stage and three in the second stage.

Table IV-47

*Independent and Dependent Variables for Final GLMs by Communication Ratios*

<b>Dependent Variable</b>	<b>Independent Variables</b>
Colleagues-R	Work Location Physical Proximity
Other Colleagues-R	Gender Education Level in Organization Team in Organization
Immediate Supervisor-R	Work Location Physical Proximity
Top Management-R	Gender Education Level in Organization Team in Organization

*Note.* R denotes communication ratio.

Table IV-48

*Independent and Dependent Variables for Final GLMs by Scales*

<b>Dependent Variable</b>	<b>Independent Variables</b>
Trust in Supervisor	Gender Team in Organization
Trust in Organization	Gender Age Education Level in Organization Team in Organization
Psychological Sense of Community	Level in Organization

The specification of the initial models in each stage was based on both theoretical and empirical considerations. Of course, the communication ratios were not only the dependent variables in the first stage but also were the independent variables in the second. Because previous studies had indicated that links between feelings of trust and sense of community and

both physical proximity and characteristics of the work environment may exist, the proximity and work location measures were included in the second set of models. However, these same variables also were expected to influence the types of communication used in the workplace, so they also were considered to be important for explaining the communication ratios. In fact, the gamma analysis of the relationships between physical proximity, work location, and the levels of different forms of communication indicated that these two variables were significantly related to amount of communication in a number of instances. When total volumes of communication was considered using ANOVA, the same was true, especially for face-to-face and e-mail communication.

A number of questions measuring demographic and organizational characteristics were included on the questionnaire in order to describe the sample. At the same time, these variables could be related to communication patterns. More importantly, they not only could be related to level of trust and sense of community but also could affect the relationships between the communication ratios and the scales. As an example, younger employees may be more comfortable using e-mail than their older counterparts. This may or may not be related to how they feel about the organization. The bi-variate analyses indicated that at least some of these respondent characteristics were indeed related to the communication ratios and feelings of trust and sense of community. So, in the models for explaining the variance in the communication ratios, not only work location and physical proximity were included but also gender, age, education, level in organization, time in organization, and team in organization.

The analysis proceeded in three phases. In the first phase, all independent variables were entered into the equation. Although degrees of freedom were limited, all interactions between the categorical independent variables were included. Some of the higher order interactions could not be estimated. All terms with a p-value of .20 or less were retained in this phase if they had substantive meaning and if their retention could be justified based on the results of the bi-variate analyses. In some cases, interactions were significant but main effects of the interacting variables were not. The number of terms remaining at this point varied across the four models. In the second phase, terms with a p-value of less than .10 were retained. In the third phase, which produced the final models, only terms that were significant at the .05 level were analyzed using plots, but significant four-way interactions were deemed too difficult to interpret given the small sample sizes.

In the second stage, the three initial models used for analyzing the trust and sense of community scales included the same variables as those from the models in the first stage that examined the communication ratios. However, all four of the communication ratios also served as independent variables, and all four proximity measures were included. The same three-phase process was followed to produce the final models at this stage of the analysis.

From a theoretical point of view, the communication ratios were expected to have relationships with trust and sense of community independent of the effects of the demographic and organizational characteristics. For this reason, only the main effects of the communication ratios were entered into the equations. However, based on the first stage analyses and the results from the second stage, it appeared that the communication ratios could be related to the scales within certain subgroups even though their main effects were insignificant. Therefore, separate analyses of the effects of the ratios within some subgroups were undertaken.

In examining the communication ratio for colleagues, only continuous variables were significant in the initial analysis of the data, so GLM was reduced to multiple regression analysis in this case. The regression resulted in significant relationships to physical proximity and work location (see Table IV-49-Table 51). These findings suggest that the greater the physical proximity with colleagues, the higher the communication ratio or e-mail used to communicate with them (see Figure IV-12). In terms of work location, employees that work at headquarters 3 days or more have a higher communication ratio than those employees that work at headquarters 2 days or less (see Figure IV-13), suggesting that employees who work more at a location other than headquarters use relatively less e-mail to communicate with colleagues than those that work at headquarters. This may mean that employees that are working off-site are communicating with their colleagues in close proximity through face-to-face or other media.

Table IV-49

*Coefficients for the Regression Analysis of Colleagues Communication Ratio*

	Unstandardized Coefficients		Standardized Coefficients	t	Sig
	B	Std. Error	Beta		
(Constant)	1.466	.062		23.644	.000
Work Location	-.031	.012	-.145	-2.526	.012
Physical Proximity	.104	.023	.262	4.572	.000

Table IV-50

*ANOVA<sup>b</sup> for the Regression Analysis of Colleagues Communication Ratio*

	Sum of Squares	df	Mean Square	F	Sig
Regression	4.857	2	2.429	11.436	.000 <sup>a</sup>
Residual	64.346	303	.212		
Total	69.204	305			

Table IV-51

*Model Summary for the Regression Analysis of Colleagues Communication Ratio*

R	R Square	Adjusted R Square	Std. Error of the Estimate
.265 <sup>a</sup>	.070	.064	.46083

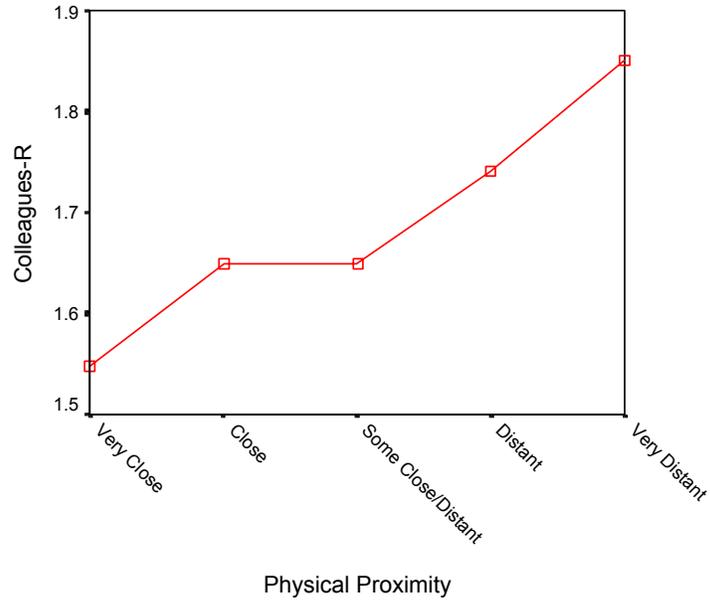


Figure IV-12: GLM of communication ratio for colleagues by physical proximity

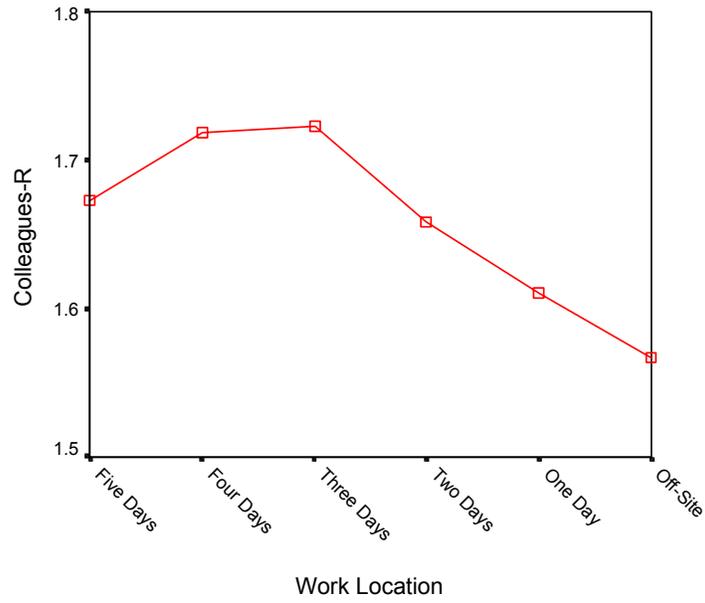


Figure IV-13: GLM of communication ratio for colleagues by work location

In communicating with other colleagues, three main effects and some interactions are significant (see Table IV-52). Education level, level in organization, and team in organization are the three main effects that resulted in positive significant relationships. More highly educated employees use more e-mail than their less educated peers (see Figure IV-14), employees in the higher ranks tend to use more e-mail than lower ranking employees (see Figure IV-15), and Team 3 uses significantly more e-mail than Teams 1 and 2 (see Figure IV-16).

Table IV-52

*Results of GLM for Other Colleagues Communication Ratio by Important Independent Variables*

**Tests of Between-Subjects Effects**

Dependent Variable: OTHFINAL

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	27.567 <sup>a</sup>	32	.861	2.559	.000
Intercept	329.338	1	329.338	978.281	.000
LEVEL2	4.302	2	2.151	6.390	.002
Q57	2.958	2	1.479	4.394	.013
EDUC	1.744	1	1.744	5.179	.024
Q53	.234	1	.234	.694	.405
LEVEL2 * Q57	7.313	4	1.828	5.431	.000
LEVEL2 * EDUC	1.848	2	.924	2.745	.066
LEVEL2 * Q53	2.778	2	1.389	4.126	.017
Q57 * EDUC	1.457	2	.729	2.164	.117
Q57 * Q53	4.812	2	2.406	7.148	.001
EDUC * Q53	3.001	1	3.001	8.915	.003
LEVEL2 * Q57 * EDUC	2.070	3	.690	2.050	.107
LEVEL2 * Q57 * Q53	5.113	3	1.704	5.062	.002
LEVEL2 * EDUC * Q53	2.817	2	1.408	4.184	.016
Q57 * EDUC * Q53	1.119	2	.559	1.661	.192
LEVEL2 * Q57 * EDUC * Q53	3.065	3	1.022	3.034	.030
Error	86.182	256	.337		
Total	874.679	289			
Corrected Total	113.749	288			

a. R Squared = .242 (Adjusted R Squared = .148)

**Legend for Independent Variables**

LEVEL2 = Level in Organization      EDUC = Education Level  
 Q57 = Team in Organization          Q53 = Gender

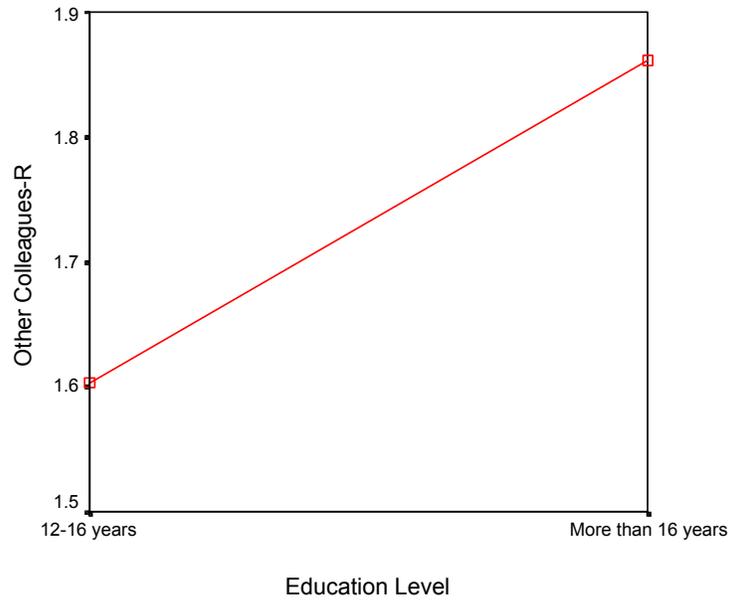


Figure IV-14: GLM of communication ratio for other colleagues by education level

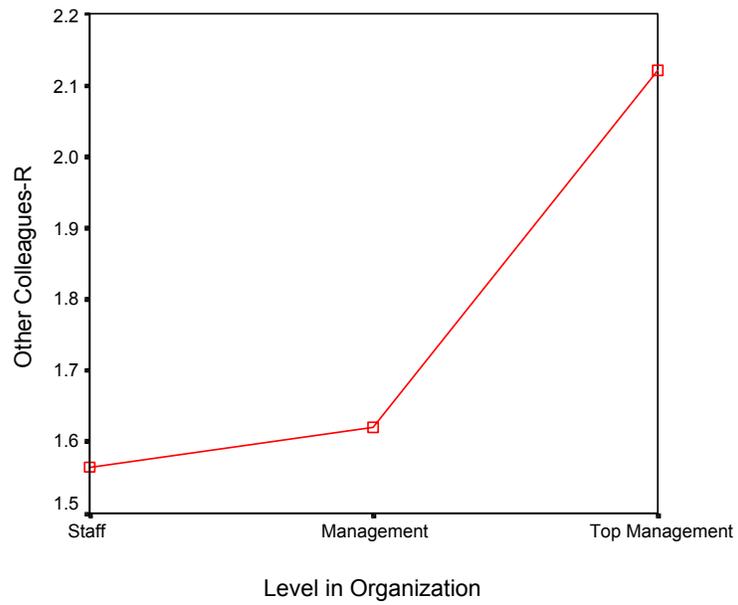


Figure IV-15: GLM of communication ratio for other colleagues by level in organization

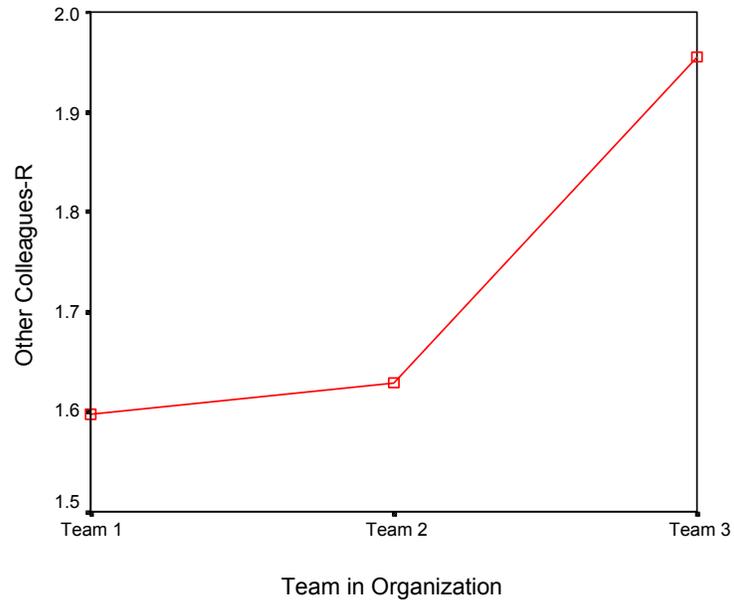


Figure IV-16: GLM of communication ratio for other colleagues by team in organization

Level in organization show significant interactions with team in organization and education level (see Figures IV-17 and IV-18). Top management in Teams 2 and 3 use significantly more e-mail than Team 1, and members of top management with more education use significantly more e-mail than their less educated counterparts.

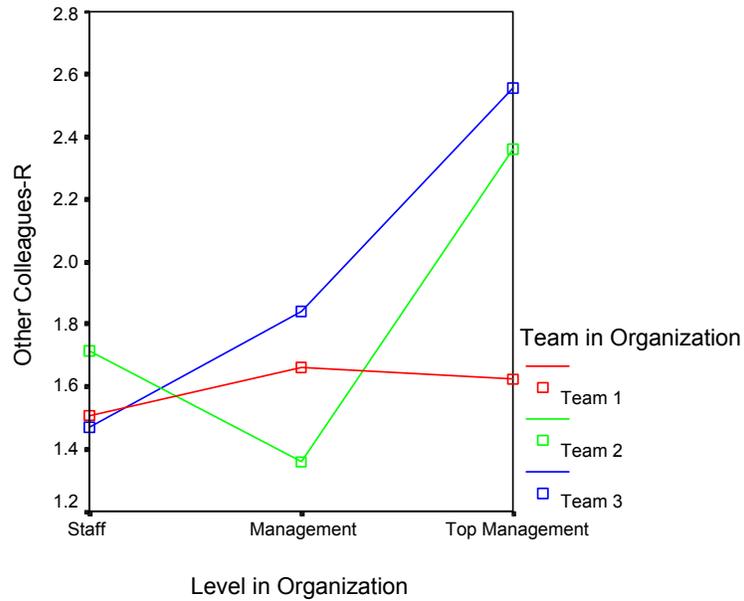


Figure IV-17: GLM of communication ratio for other colleagues by level and team in organization

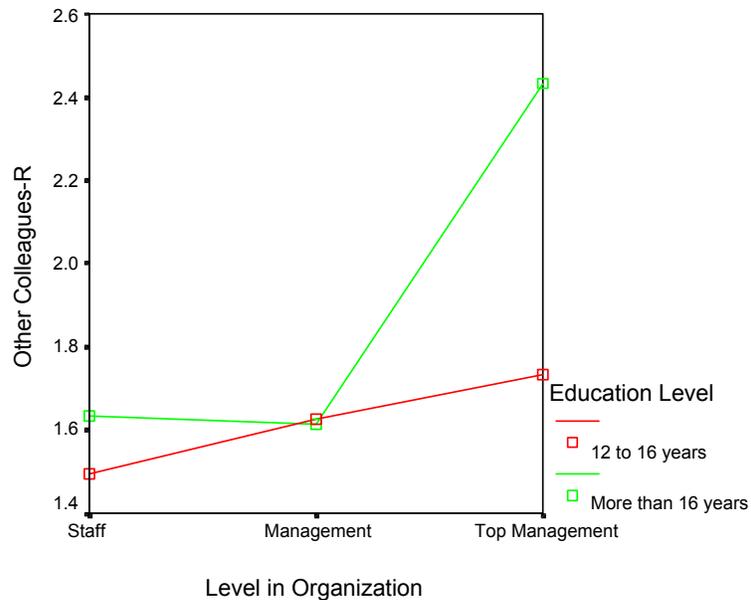


Figure IV-18: GLM of communication ratio for other colleagues by level in organization and education

While gender as a main effect does not result in a significant relationship, several interactions with gender are significant. For instance, males in staff and management positions have a higher communication ratio than their female counterparts, suggesting that males use e-mail more than females (see Figure IV-19). However, as males and females reach top management positions, females use significantly more e-mail than males.

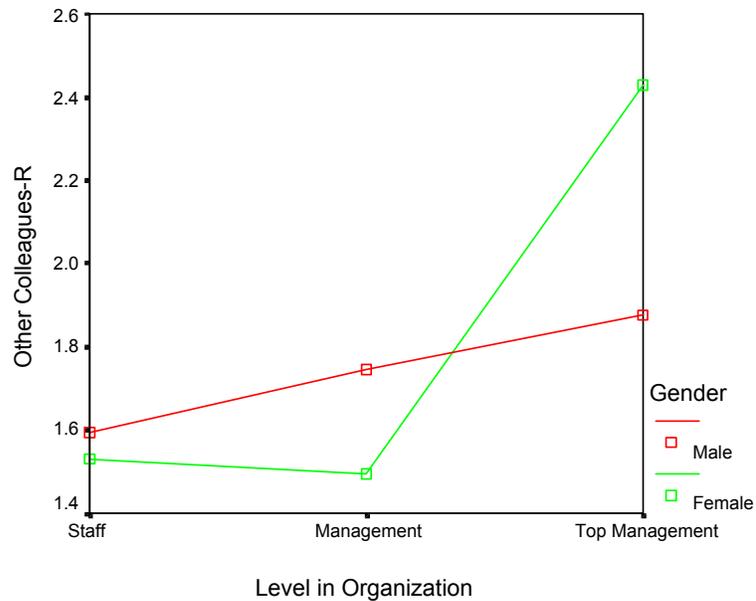


Figure IV-19: GLM of communication ratio for other colleagues by level in organization and gender

Gender also resulted in a significant interaction with level and team in organization (see Figure IV-20). The most apparent difference is between males and females on Team 3, indicating that as female members of Team 3 advance in level, so does their use of e-mail communication. In contrast, males on Team 3 decrease the amount of e-mail as they advance in rank. While the communication ratios of males on Team 1 show little difference across the three employment levels, the females on Team 1 show a significant increase in e-mail use as they move from staff to management positions. Team 2 shows relatively little difference between males and females in staff and management positions. However, as males move into top management, there is a significant increase in e-mail communication for males on Team 2. Unfortunately, not enough data were available to gauge the communication ratio for Team 2 females in top management positions.

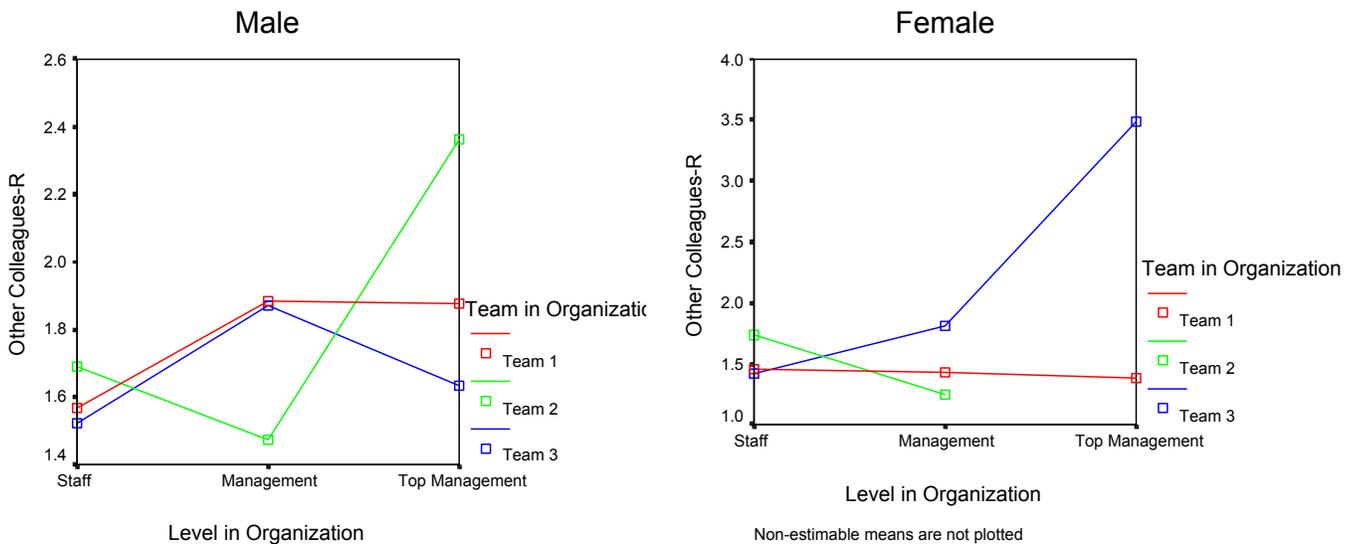


Figure IV-20: GLM of communication ratio for other colleagues by gender, level, and team in organization

Level in organization and education level result in a positive interaction for gender (see Figure IV-21). As their education level and level in organization increases, females have a higher communication ratio. On the other hand, males with lower education levels at the management level have higher communication ratios than their more educated peers. However, as males reach top management positions, the more educated males have slightly higher communication ratios than their lower educated counterparts. Not surprisingly, then, a four-way interaction between gender, level in organization, team in organization, and education level result in a significant relationship. This interaction is not discussed because the data were too difficult to interpret.

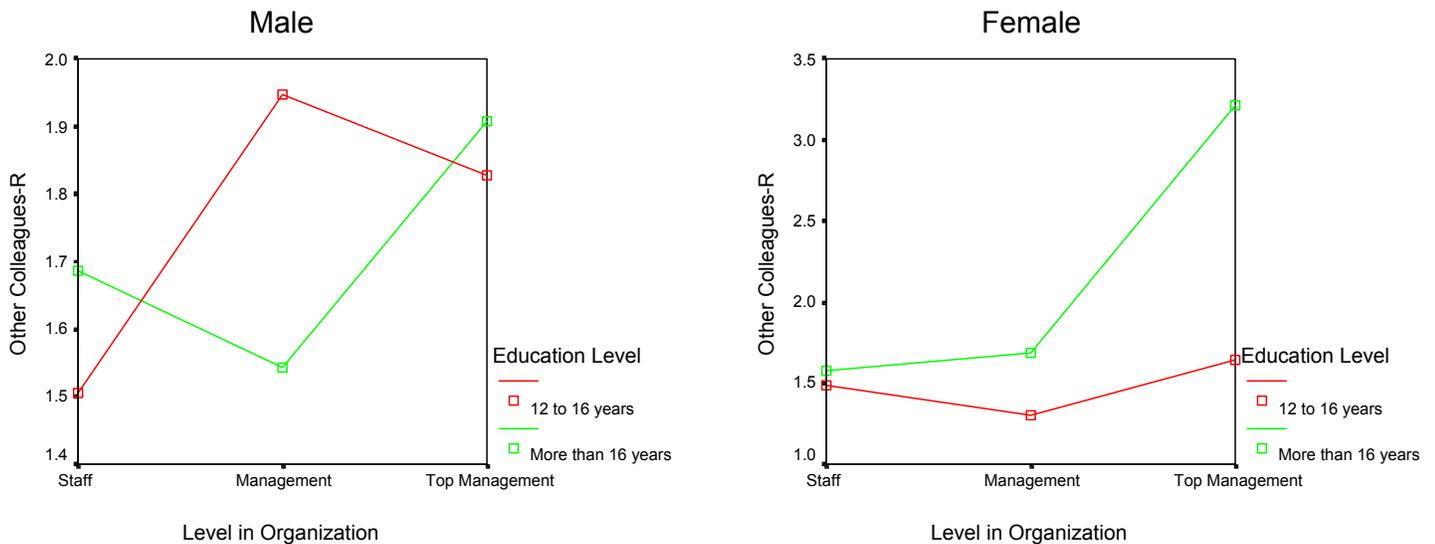


Figure IV-21: GLM of communication ratio for other colleagues by gender, level in organization, and education level

As with the data for colleagues, the significant variables for immediate supervisor were continuous, and GLM was reduced to regression analysis. Similar to the previous findings with colleagues, physical proximity and work location are both significantly related to the communication ratio for immediate supervisor, but in opposite directions (see Tables IV-53-IV-55). Physical proximity results in a positive significant relationship, and work location yields a negative significant relationship. These findings suggest that as physical proximity with immediate supervisor becomes more distant, more e-mail is used (see Figure IV-22). In contrast, the more days that employees work away from headquarters, the less e-mail is used to communicate with immediate supervisor (see Figure IV-23).

Table IV-53

*Coefficients for the Regression Analysis of Immediate Supervisor Communication Ratio*

	Unstandardized Coefficients		Standardized Coefficients	t	Sig
	B	Std. Error	Beta		
(Constant)	1.387	.053		26.410	.000
Work Location	-.027	.012	-.142	-2.319	.021
Physical Proximity	8.729E-02	.019	.278	4.539	.000

Table IV-54

*ANOVA<sup>b</sup> for the Regression Analysis of Immediate Supervisor Communication Ratio*

	Sum of Squares	df	Mean Square	F	Sig
Regression	3.474	2	1.737	10.513	.000 <sup>a</sup>
Residual	47.745	289	.165		
Total	51.219	291			

Table IV-55

*Model Summary for the Regression Analysis of Immediate Supervisor Communication Ratio*

R	R Square	Adjusted R Square	Std. Error of the Estimate
.260 <sup>a</sup>	.068	.061	.40646

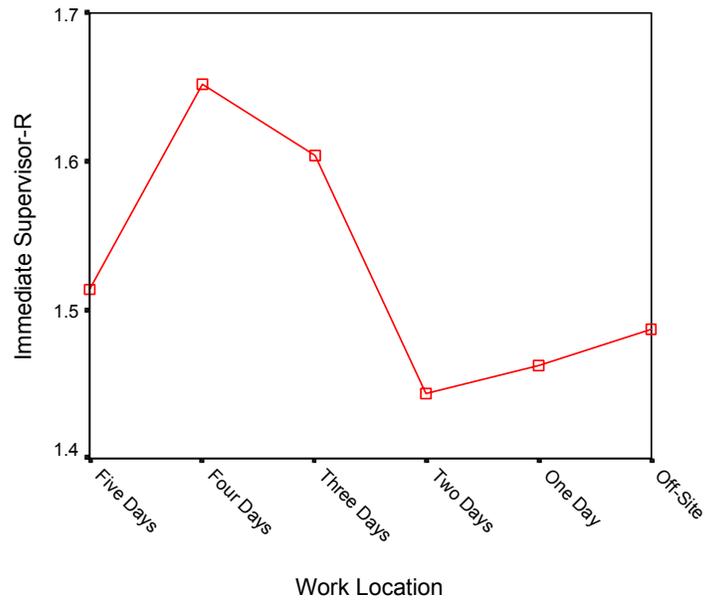


Figure IV-22: GLM of communication ratio for immediate supervisor by physical proximity

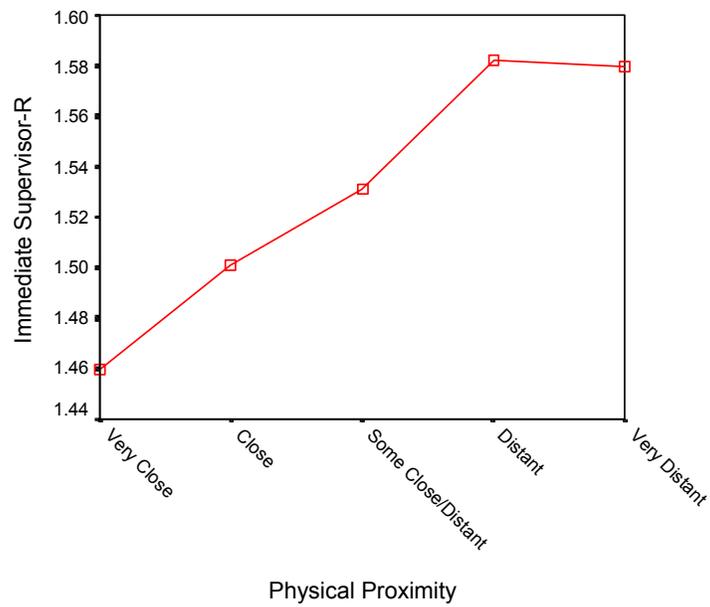


Figure IV-23: GLM of communication ratio for immediate supervisor by work location

Gender, level in organization, and team in organization result in positive significant relationships for the top management communication ratio (see Table IV-56). Females have a higher communication ratio than males, suggesting that more females use e-mail than males to communicate with top management (see Figure IV-24). As employees move higher in position, the communication ratio increases, indicating that higher ranked employees use more e-mail to communicate with top management (see Figure IV-25). Similar to previous findings, Team 3 uses significantly more e-mail than Teams 1 and 2 (see Figure IV-26).

Table IV-56

*Results of GLM for Top Management Communication Ratio by Important Independent Variables*

**Tests of Between-Subjects Effects**

Dependent Variable: TOPFINAL

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	17.458 <sup>a</sup>	16	1.091	1.949	.017
Intercept	388.133	1	388.133	693.243	.000
Q53	3.088	1	3.088	5.515	.020
Q57	5.053	2	2.527	4.513	.012
LEVEL2	7.616	2	3.808	6.802	.001
Q53 * Q57	5.581	2	2.791	4.984	.008
Q53 * LEVEL2	1.288	2	.644	1.150	.318
Q57 * LEVEL2	2.806	4	.701	1.253	.289
Q53 * Q57 * LEVEL2	6.416	3	2.139	3.820	.011
Error	129.892	232	.560		
Total	812.908	249			
Corrected Total	147.350	248			

a. R Squared = .118 (Adjusted R Squared = .058)

**Legend for Independent Variables**

Q53 = Gender

Q57 = Team in Organization

LEVEL2 = Level in Organization

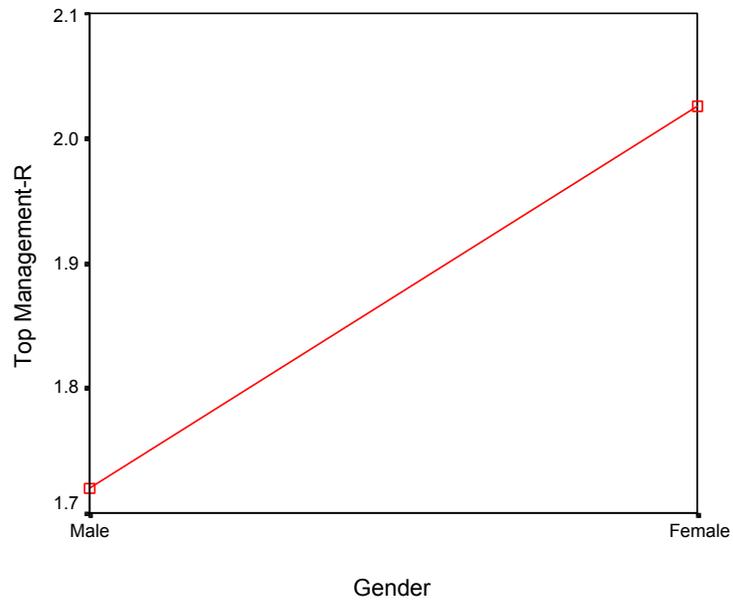


Figure IV-24: GLM of communication ratio for top management by gender

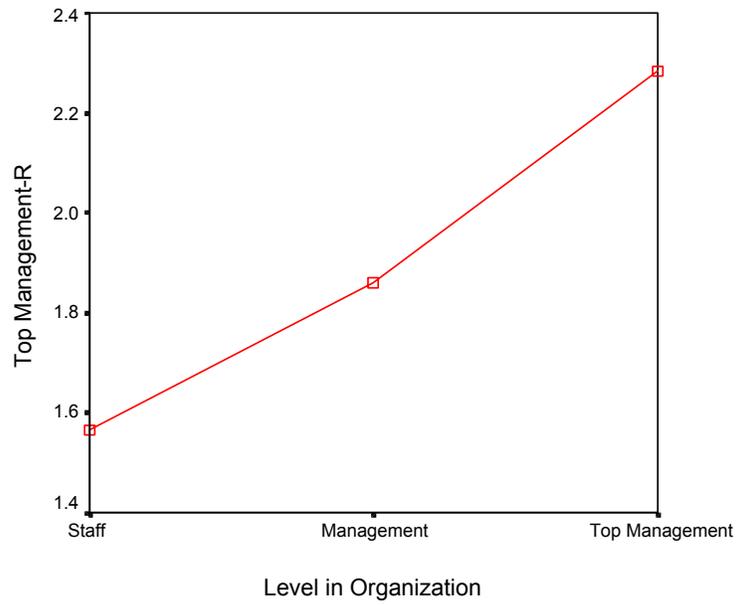


Figure IV-25: GLM of communication ratio for top management by level in organization

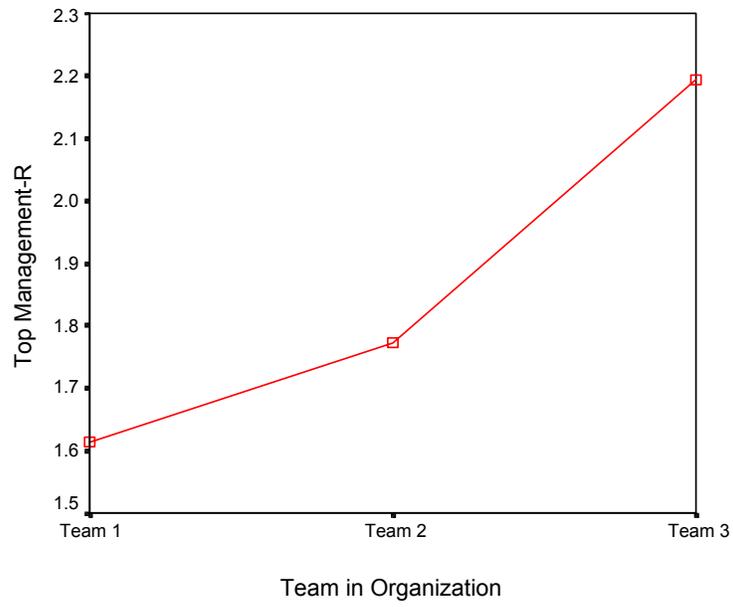


Figure IV-26: GLM of communication ratio for top management by team in organization

The GLM resulted in one significant two-way interaction. Gender is significantly related to the top management ratio (see Figure IV-27). Females on Team 3 use more e-mail to communicate with top management than females on Teams 1 and 2. No matter which team they are on, males communicate by e-mail about the same rate.

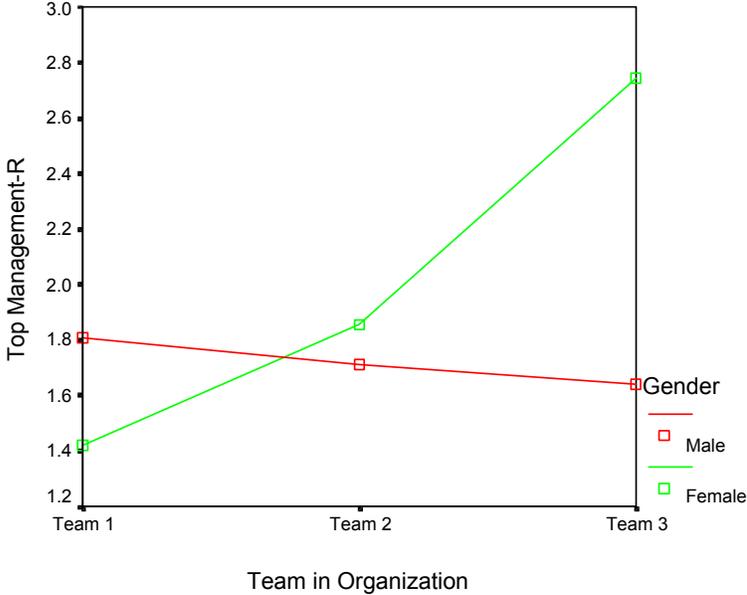


Figure IV-27: GLM of communication ratio for top management by team in organization and gender

The communication ratios are not important intermediate values for explaining trust and psychological sense of community in the workplace. This finding indicates that more e-mail and less communication through other media does not necessarily relate to organizational trust and sense of community. Similarly, the relationship between the communication ratios and employees who are physically very close and close to others in the workplace are not important variables for explaining organizational trust and psychological sense of community in the workplace. While the communication ratios are not important intermediate values for explaining trust and sense of community, there are interesting explanatory relationships between each of the scales and other important variables.

First, trust in supervisor results in one significant main effect and one significant interaction (see Table IV-57). Team 3 has significantly less trust in supervisor than Teams 1 and 2 (see Figure IV-28). Interestingly, as found in the previous analyses, Team 3 also has a higher communication ratio or uses more e-mail than Teams 1 and 2. Gender is strongly related to team in organization for trust in supervisor on Team 3 (see Figure IV-29). Females on Team 3 have less trust in supervisor than males. Trust in supervisor for males and females on the other teams are about the same.

While these findings suggest that a relationship may exist between the communication ratios and team in organization, gender, and trust in supervisor, further analyses show no significant relationship between these variables. There may be additional interactions that exist but because of the size of the sample in this study, they cannot be detected. These findings do suggest that factors other than communication medium exist, like team culture, that may influence feelings of trust and sense of community among employees.

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Table IV-57

*Results of GLM for Trust in Supervisor by Important Independent Variables*

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**Tests of Between-Subjects Effects**

Dependent Variable: AVESUPER

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	9.240 <sup>a</sup>	5	1.848	3.268	.007
Intercept	4666.749	1	4666.749	8254.207	.000
Q57	5.820	2	2.910	5.147	.006
Q53	.702	1	.702	1.241	.266
Q57 * Q53	3.116	2	1.558	2.755	.065
Error	190.532	337	.565		
Total	5769.272	343			
Corrected Total	199.772	342			

a. R Squared = .046 (Adjusted R Squared = .032)

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**Legend for Independent Variables**

Q57 = Team in Organization

Q53 = Gender

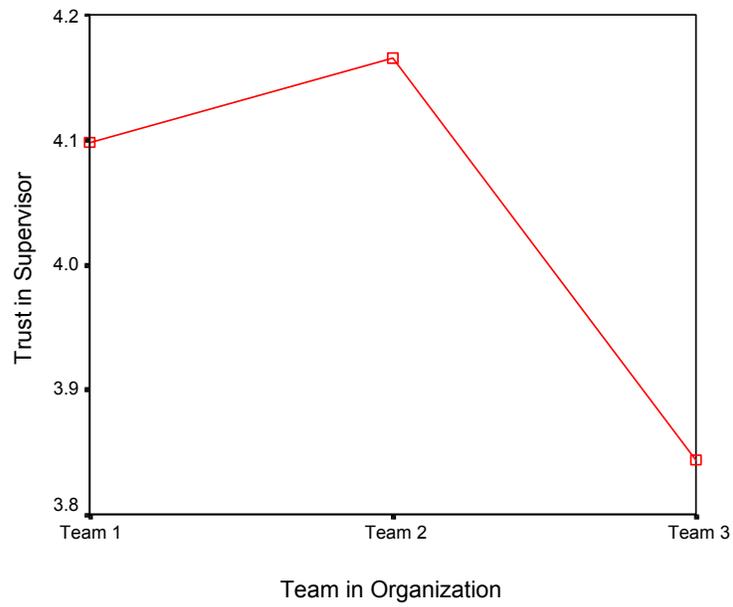


Figure IV-28: GLM of trust in supervisor by team in organization

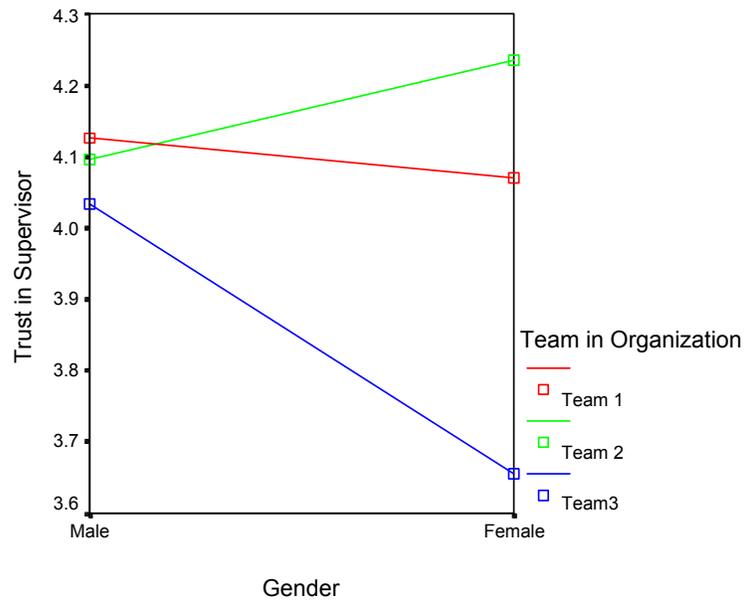


Figure IV-29: GLM of trust in supervisor by team in organization and gender

The GLM for trust in organization results in one significant main effect and several significant interactions (see Table IV-58). As employees advance in the organization, trust in organization increases (see Figure IV-30). This finding may result from top management having more invested in the organization than staff. For instance, staff tends to be younger at the beginning of their careers and may seek new opportunities outside the organization. On the other hand, management and top management may be more seasoned and settled in their careers, and may seek stability and career growth within the organization. Also, organizational benefits, like bonuses, additional vacation time, social gatherings, and other amenities increase as one moves up the ladder and may foster greater feelings of trust in organization among those in higher positions. It is also possible that those who seek to rise in the organization are inherently different than others.

Two main effects, team in organization and gender, are close to significant and deemed worthy of examining. As with the trust in supervisor, Teams 1 and 2 have significantly more trust in organization than Team 3 (see Figure IV-31). In general, females tend to have less trust in organization than their male counterparts (see Figure IV-32). Team in organization also has a significant three-way interaction with gender and age, suggesting that these factors together may influence trust in organization (see Figure IV-33). Males between the ages of 21 and 30 have considerably more trust in organization than their female counterparts on all three teams. Females between the ages of 31 and 45 only have more trust in organization than males on Team 2. Females between the ages of 46 and 68 on Teams 2 and 3 have less trust in organization than males. Gender also is in a significant three-way interaction with level in organization and education level (see Figure IV-34). For instance, among employees that have 12 to 16 years of education, females in management positions have considerably less trust in organization than males. For employees that have 16 or more years of education, females consistently have less trust across all employment levels than their male counterparts, although this is less so at the top management level. A significant four-way interaction with team in organization, level in organization, age, and education level was found, but the details of the interaction are too complex to interpret.

The communication ratios were not involved in any of these interactions. However, there may be other interactions that cannot be detected. For instance, there appears to be a trend among more highly educated employees between the ages of 46 and 68 and the three scales.

Although not statistically significant, these employees consistently have a noticeable drop in trust and sense of community across all teams and with both genders. As with trust in supervisor, these findings suggest that factors other than communication media may be present that influence feelings of trust and community.

Table IV-58

*Results of GLM for Trust in Organization by Important Independent Variables***Tests of Between-Subjects Effects**

Dependent Variable: AVEORG

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	53.963 <sup>a</sup>	70	.771	1.610	.004
Intercept	1181.323	1	1181.323	2466.821	.000
Q57	2.622	2	1.311	2.737	.067
LEVEL2	3.377	2	1.688	3.526	.031
Q53	1.635	1	1.635	3.414	.066
AGE	1.590	2	.795	1.660	.192
EDUC	7.872E-03	1	7.872E-03	.016	.898
Q57 * LEVEL2	1.363	4	.341	.711	.585
Q57 * Q53	.294	2	.147	.306	.736
Q57 * AGE	3.307	4	.827	1.726	.144
Q57 * EDUC	.613	2	.307	.640	.528
LEVEL2 * Q53	3.908E-02	2	1.954E-02	.041	.960
LEVEL2 * AGE	1.258	3	.419	.876	.454
LEVEL2 * EDUC	1.878	2	.939	1.960	.143
Q53 * AGE	1.722	2	.861	1.797	.168
Q53 * EDUC	.273	1	.273	.570	.451
AGE * EDUC	.534	2	.267	.558	.573
Q57 * LEVEL2 * Q53	.919	3	.306	.639	.590
Q57 * LEVEL2 * AGE	3.764	4	.941	1.965	.100
Q57 * LEVEL2 * EDUC	2.242	3	.747	1.560	.199
Q57 * Q53 * AGE	4.491	4	1.123	2.344	.055
Q57 * Q53 * EDUC	1.811	2	.905	1.891	.153
Q57 * AGE * EDUC	.324	3	.108	.226	.879
LEVEL2 * Q53 * AGE	.203	2	.101	.211	.810
LEVEL2 * Q53 * EDUC	2.759	2	1.380	2.881	.058
LEVEL2 * AGE * EDUC	6.532E-02	1	6.532E-02	.136	.712
Q53 * AGE * EDUC	.582	2	.291	.608	.545
Q57 * LEVEL2 * Q53 * AGE	.764	1	.764	1.595	.208
Q57 * LEVEL2 * Q53 * EDUC	.146	1	.146	.305	.582
Q57 * LEVEL2 * AGE * EDUC	2.221	1	2.221	4.638	.032
Q57 * Q53 * AGE * EDUC	1.521	1	1.521	3.177	.076
LEVEL2 * Q53 * AGE * EDUC	.000	0	.	.	.
Q57 * LEVEL2 * Q53 * AGE * EDUC	.000	0	.	.	.
Error	128.820	269	.479		
Total	4791.861	340			
Corrected Total	182.783	339			

a. R Squared = .295 (Adjusted R Squared = .112)

**Legend for Independent Variables**

Q57 = Team in Organization

Q53 = Gender

LEVEL2 = Level in Organization

EDUC = Education Level

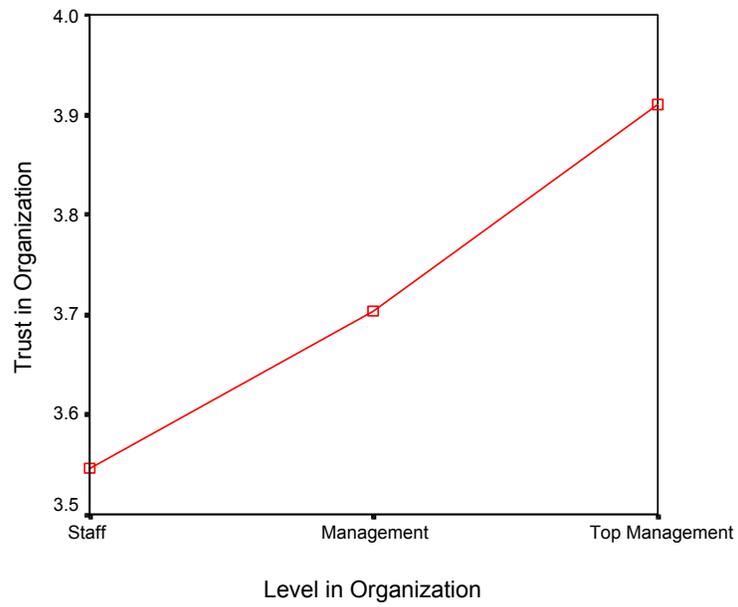


Figure IV-30: GLM of trust in organization by level in organization

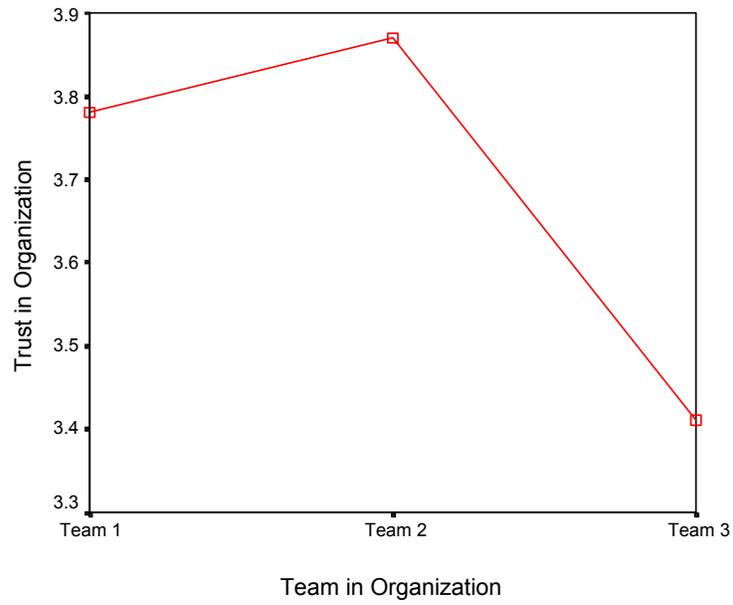


Figure IV-31: GLM of trust in organization by team in organization

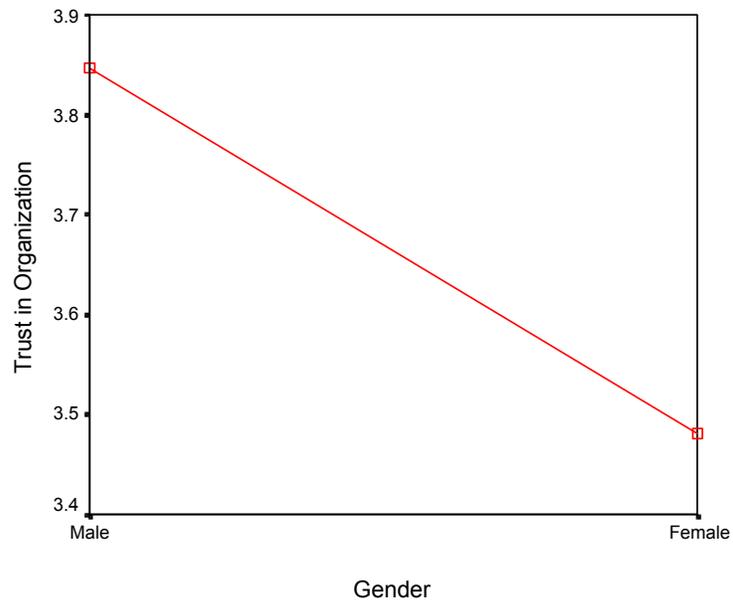


Figure IV-32: GLM of trust in organization by gender

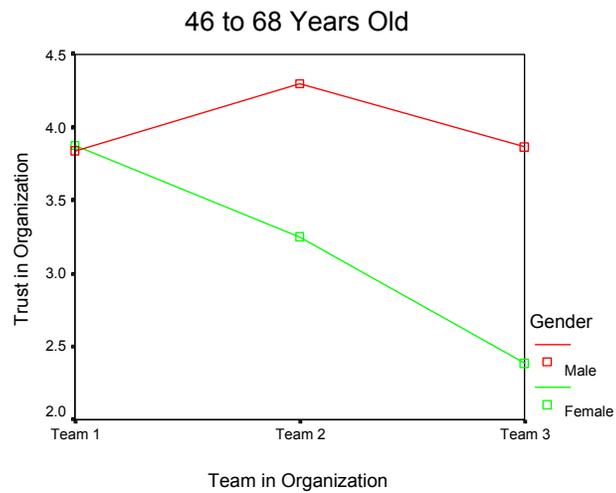
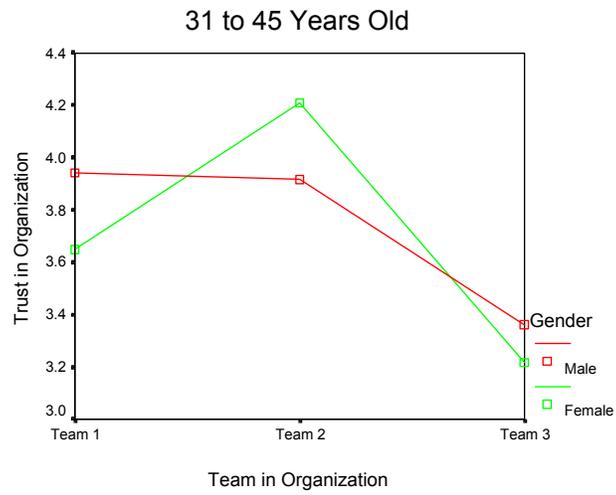
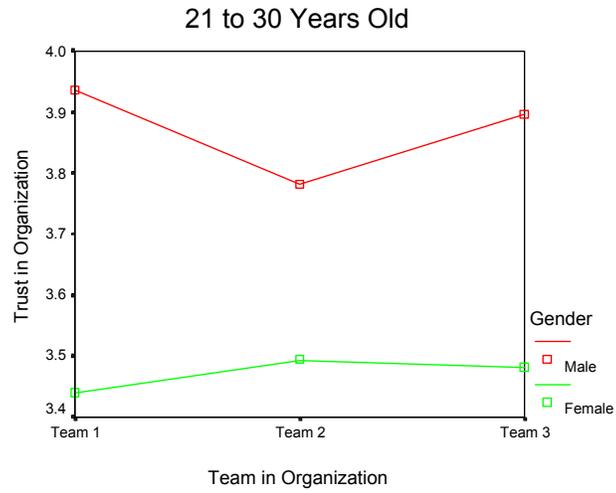


Figure IV-33: GLM of trust in organization by gender, age, and team in organization

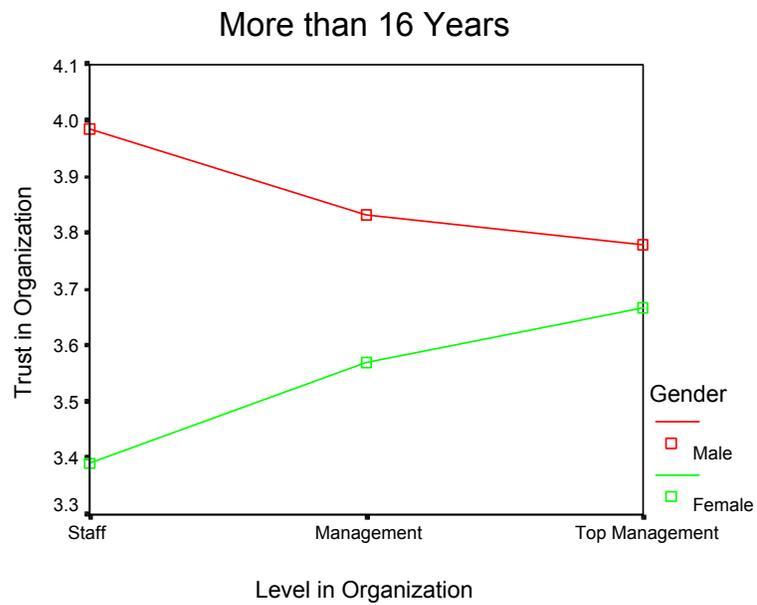
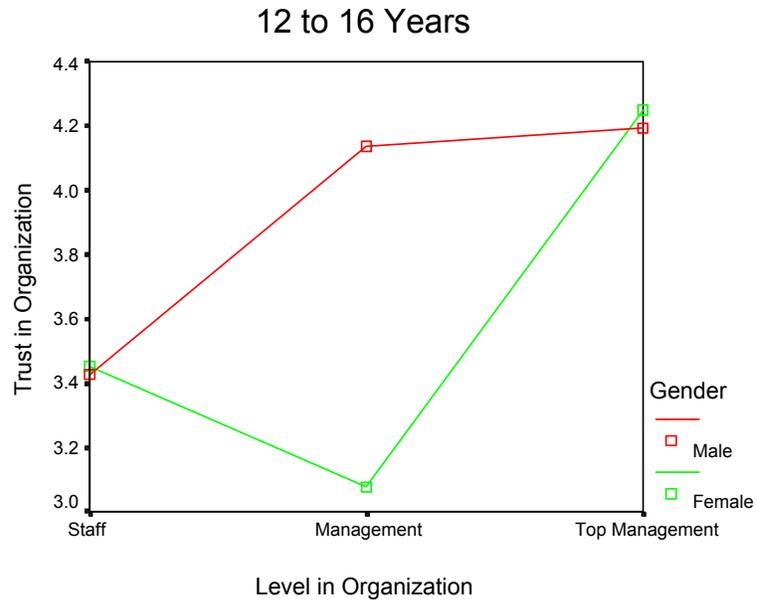


Figure IV-34: GLM of trust in organization by gender, education, and level in organization

The only variable that has explanatory value for psychological sense of community was level in organization (see Table IV-59). Given all the previous data, and the results of the trust scales, it is surprising not to find more variables with explanatory value. However, consistent with trust in organization, level in organization does relate to one's sense of community. Top management has significantly more sense of community than staff and management (see Figure IV-35). Like trust in organization, members of top management may feel a greater sense of community because of their commitment to and investment in the organization. This also may reflect the organization's commitment to and investment in persons in top management positions.

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Table IV-59  
*Results of GLM for Psychological Sense of Community by Important Independent Variables*

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**Tests of Between-Subjects Effects**

Dependent Variable: AVEPSOC

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	2.642 <sup>a</sup>	2	1.321	4.935	.008
Intercept	3420.851	1	3420.851	12780.376	.000
LEVEL2	2.642	2	1.321	4.935	.008
Error	92.612	346	.268		
Total	4901.203	349			
Corrected Total	95.254	348			

a. R Squared = .028 (Adjusted R Squared = .022)

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**Legend for Independent Variables**

LEVEL2 = Level in Organization

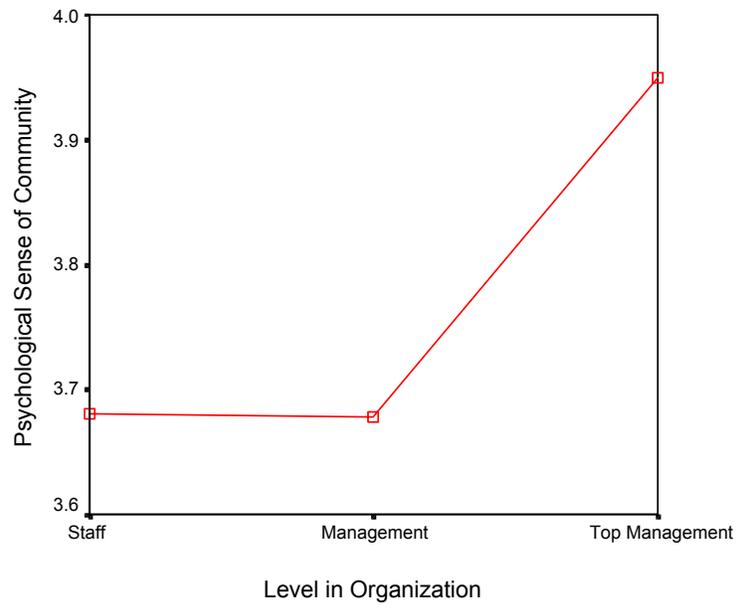


Figure IV-35: GLM of psychological sense of community by level in organization

## IV.5 Cross-Validation of the Models

The models in the previous section were cross-validated (CV) by randomly subsetting the file and repeating the multi-variable analysis. A new, random variable following a uniform distribution from 0 to 9 was created, and all cases with a value from 0 to 6 on this variable were selected for analysis. Approximately 64 percent of the cases were used, and Appendix B contains the results from this exercise.

The final CV models for two of the communications ratios, communications with colleagues and supervisor, were identical to the original ones. Both work location and physical proximity were significantly related to the ratios. For communications with others, team and education were still related to the ratio, but level in the organization seems to have been replaced by the time in organization (i.e., years) variable. Certainly the two are related, and the smaller sample size, especially in the top management category, could explain the fact that the level variable is not as powerful as it was in the original sample. The interactions involving the gender are no longer significant, but, again, the level variable played a role in those interactions. Only the time in organization variable is marginally related to communications with top management. This is the one case where the CV model for the communications ratios differs substantially from the original model. This could be explained by the substitution of time in organization for level in organization, but neither team nor gender is significant.

As for the trust and sense of community scales, there are again similarities and differences between the CV models and the original ones. In the full sample, the only variable significantly related to trust in supervisor was team. Team is still important in the CV model, but it now interacts with gender and education. For trust in the organization, interactions involving both team and education are still significant in the CV model, and the interaction that includes level, education, and team also may be marginally significant given the smaller sample size. Neither age nor gender is involved in significant interactions, as they were in the original model. In the CV model for sense of community, more variables actually are important than in the original model. Again, the time in organization variable may have replaced the level in organization variable (the only significant variable in the original model), but education, gender, and team also have relationships with sense of community. In fact, gender is the only one with a significant main effect. The loss of power for the level variable could explain why these other

variables have risen to prominence. As with time in organization and level in organization, multicollinearity in some cases may be masking some complex relationships, although level in organization is more substantively interesting than time in organization.

#### **IV.6 Comments from Participants**

Two open-ended questions were added to the questionnaire to allow participants to share their personal experiences with e-mail communication and their perception of its influence on trust and psychological sense of community in the work environment. The two open-ended questions were used solely for observational interest and to identify future research studies. The responses from these items were not used to address the research questions. However, the responses provide insight into how employees view e-mail in the workplace and its relationship to building feelings of trust and community.

For the most part, respondents found both positive and negative aspects of e-mail. The responses complement the statistical findings, and the five consistent themes in the participant responses allow for a deeper understanding of the data. First, many respondents agreed that e-mail helped to increase communication in the workplace because of the access and ease of use, but they often indicated that e-mail did present pitfalls to effective communication. Comments included—

I've found that I really tend to communicate more with everyone in my office because of the quickness of e-mail. E-mail is risky however because of misinterpretation of tone, etc.

E-mail is a fast, effective tool for mass communication. However, when it deals with a close office environment, it may give off a sense of distance and even laziness considering the person sending it sits two cubicles away.

Second, respondents viewed e-mail as a useful tool that could supplement communication, but felt that it should not be the substitute for other media in an organization. The over dependence

on e-mail, respondents indicated, decreased more effective and personal methods of communication. Responses included—

It enhances communication between co-workers who are at different sites or who work different schedules. It is an excellent supplement to other existing modes of communication, but should not be considered a replacement.

In my workplace, I have seen e-mail become the primary means of communication. I see an increased number of subordinates and superiors shy away from face-to-face and phone communication in favor of e-mail exchange.

E-mail increases the opportunity for miscommunication. E-mail replaces face-to-face meetings, reducing the touch part of the working relationship. E-mail is overused for trivial items that someone would rarely communicate with others.

Third, many respondents agreed that e-mail was an efficient communication medium because it enables peers to remain in touch despite distance, but that it might not be as effective as other forms of communication. Respondents consistently remarked on the difficulty of recognizing tone in e-mail messages, which often resulted in the misinterpretation of communication.

Specific comments included—

It is more difficult to gauge non-verbal communications and can lead to misinterpretation of fact. While some may prefer e-mail communications, I believe it reduces the overall effect of communicating and may hinder the development of strong interpersonal relationships in the workplace.

It works great for disseminating information that keeps people apprised of task status or items that require little or no group input. When it's used to discuss issues, it is slow and difficult to negotiate.

E-mail increases the communication process in my organization. Unfortunately, e-mail does not convey feelings, moods, and tones. The absence of human contact can cause a lot of misinterpretation.

Fourth, respondents indicated that e-mail served as a paper trail of communication between people, but that it was not a good method for engaging groups in discussion. These responses included—

E-mail allows for the documentation of a conversation. E-mail eliminates the need to take notes during a discussion or phone call. It increases productivity by reducing errors in communication and by reducing the amount of time needed to relay information.

I don't think it changes the way people interface with one another but it does give a "paper trail" to follow for work related items.

E-mail has resulted in a proliferation of communication that is not necessarily productive. There is a tendency to cc: everyone who might possibly be interested or linked to the communication. With so many e-mails, you tend to pay less attention.

Fifth, respondents highlighted the loss of human context with e-mail, indicating that messages could be ignored and misunderstood. Several respondents specifically mentioned the “loss of human contact” and “disconnect” with others by using e-mail. Responses included—

While the advent of e-mail communication certainly makes everyone accessible, it can be lonely. I’ve been around the work environment to remember what life was like before e-mail, where an individual picked up the phone or walked down the hall to have a work-related discussion. That contact was preferable to me than the current electronic version of discussion.

E-mail communication changes the way people in organizations communicate. There is a lack of personality in many of the e-mails I receive and deliver. Also, it takes away the ability to constantly work on people skills in certain settings.

I could not work effectively off-site or on travel if I did not have e-mail. E-mail helps me do my job, but does not provide me with a sense of community in the workplace.

E-mail promotes no face-to-face communication and less telephone. This is causing an increased human-to-human disconnect.

## IV.7 Chapter Summary

This study was aimed at learning more about the phenomenon of e-mail communication in the workplace and its relationship to organizational trust and psychological sense of community. The sample was comprised of 201 males and 146 females between the ages of 21 to 68 years. Participants ranged in level of education from high school to doctorate. The majority of participants worked for the organization 5 years or less, and each participant worked on one of three teams. Most participants were in either staff or management positions, while only 12 percent held top management positions.

Initial results show that face-to-face and e-mail communications are the primary means by which the employment types communicate with others in the workplace. Younger employees use more face-to-face and e-mail to communicate with their colleagues and immediate supervisor than their older counterparts. While each employment type uses different amounts of each media, all employment levels use e-mail to a considerable extent to communicate with other employees that are in close physical proximity.

Pearson's correlation reveals that the two trust scales and the one psychological sense of community measure selected for this study are related. Communication ratios were created to examine e-mail communication and the relationship to trust and sense of community in the workplace. Unfortunately, the communication ratios were not found to be important intermediate variables for explaining organizational trust and psychological sense of community in the workplace. This finding indicates that more e-mail and less communication through other media does not necessarily relate to organizational trust and sense of community. Similarly, the relationship between employees who were physically very close and close to others in the workplace and the communication ratios were not found to be important variables for explaining organizational trust and psychological sense of community in the workplace. While the communication ratios were not found to be important intermediate variables for explaining trust and sense of community, there were interesting explanatory relationships between each of the scales and other important variables.