Exploring the Relationships between Students' Academic Motivation and Social Ability in Online Learning Environments

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Abstract. This research explicates the construct of social ability and examines the relationship between students' academic motivation and social ability in online learning environments. The study extends Author (in press)'s research and identifies five factors of students' social ability; social presence with students, social presence with instructor, social navigation, concerns for social interaction, and confidence in social interaction. In addition, the results of canonical correlations indicate that significant and meaningful relationships exist between academic motivation and online social ability. Lastly, multivariate multiple regression results showed predictive power between specific motivation constructs and factors of online social ability. The findings have implications for further theory development about the social nature of online learning and design and implementation issues for online learning environments.

INTRODUCTION

Distance education is growing rapidly and the advancing recognition of social theories of learning, that explain how people learn through actively interacting with others (Vygotsky, 1978; Wenger, 1998), makes it important to understand how students perceive the social nature of online learning. Author (in press) explicated the construct of social ability to represent the students' experience and perception of social interaction and developed an instrument to measure social ability. Using factor analysis, they found social presence, social navigation, and social connectedness are important factors explaining social interaction in online learning environments. The present study, further develops the construct of social ability and examines its relationship to academic motivation.

Social ability is an attribute of an individual situated in activity and represents a relationship between the online tools, the individual and the tasks. Since it is apparent that not all students in a particular online learning environment engage in or perceive the same level of social interaction, we look to attributes of the tools, the individuals and the tasks to explain differences. Motivation as a relationship between the individual and the task is expected to be an important factor influencing students' social ability. There have been plentiful studies on how students' motivation affects their academic performance, cognitive engagement, self-regulated learning, and learning satisfaction. However, there is a need for empirical studies on the relations between students' motivation and their social experience and perception of social interaction in online learning environments.

The purposes of this study are twofold: first, to extend Authors (2005)'s research to further explicate the factors explaining students' social ability in online learning environments; second, to explore the relationships between students' motivation and social ability. More specifically, the research questions are as follows:

1. In what ways do students perceive their social ability and experience the social nature of online learning?

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2. What relationships exist between students' academic motivation and social ability in online learning environments?
3. To what extent and in what ways does students' academic motivation predict their social ability in online learning environments?

THEORETICAL PERSPECTIVES

Motivation

Motivation is generally defined as "the process whereby goal-directed activity is instigated and sustained" (Pintrich & Schunk, p. 5). Among several motivational constructs, goal orientation, self-efficacy, and task value have consistently shown strong relations to achievement-related behaviors.

Goal orientation theories explain why people engage in tasks and how they approach the tasks. Goal orientations theorists have generally operationalized goal orientations as intrinsic and extrinsic. Students holding intrinsic goals tend to exert more effort and are more persistent at finishing difficult tasks than those holding extrinsic goals (Ames & Archer, 1988; Merritte, 2000; Nicholls, 1984; Pintrich & Schunk, 2002). Also, Green and Miller (1996) found that college students holding intrinsic goals were more likely to use deep cognitive strategies and self-regulatory strategies.

Bandura (1997) defines self-efficacy as an individual's conviction about his/her own capability "to organize and execute the courses of action required managing prospective situations" (p. 2). When people judge themselves highly capable they will actively engage in new tasks and persist at the tasks in the face of difficulty more so than those who judge themselves less capable (Bandura, 1997; Pintrich & Schunk, 2002). If we apply this concept to online educational settings, students having low self-efficacy may be reluctant to actively engage in the social interaction that is necessary for completing tasks successfully. Lee (2002) found that college students with strong academic self-efficacy performed better than others with lower self-efficacy in a Web-based course.

Task value refers to an individual's beliefs about the various reasons for engaging in a task (Pintrich & Schunk, 2002). Bures, Amundsen, and Abrami (1998) found that students holding higher outcome expectancies and task values tended to be more satisfied with their computer conferencing learning experience than those holding lower expectancy and value beliefs. Lee (2002) also found that students valuing the task were more likely to be satisfied with their online learning experience.

Social Ability

Author (2005) defined social ability as "the person's capacity to associate with fellows and to use the members, resources and tools of the social context to achieve something of value" (p. 1). Social ability, therefore, explains how learners experience and perceive social interaction while they make relations with other individuals, social practice tools, and the tasks in online learning environments. In their study, Author (in press) found social presence, social navigation, and social connectedness as 3 factors of students' online social ability.

Rourke, Anderson, Garrison, and Archer (2001) viewed social presence as an individual learner' ability to express him/herself both socially and affectively in a community. Tu and McIsaac (2002) found the degree of social presence to be positively related to students' interaction with others in online learning. Social navigation refers to "a particular phenomenon,

in which a user's navigation through an information space was primarily guided and structured by the activities of others within that space" (Dourish, 2002, p. 18). For example, when you participate in online discussions and use the number of threaded postings under the topic headings to point you toward hot issues. In this case, social navigation influences students' interaction in online learning environments. In addition to social presence and social navigation, a review of the social interaction literature (Gunawardena & Zittle, 1997; Tu, 2002a; Tu, 2002b; Weisband & Reinig, 1995) showed that students' privacy, learning context, feedback, and communication skills are potentially important aspects of students' interaction in online learning environments.

METHODOLOGY

Participants

Data were collected from online courses in Winter 2005 offered in the College of Education in a mid-west university. We sent recruiting email with consent forms and the URL of the Online Experience Student Survey. 133 Participants filled out the survey over the Internet. After initial data screening, 8 cases were eliminated due to missing data; thus, the final sample was 125 cases. Table 1 reports the demographic information for 123 cases (2 cases did not provide detail demographic information.)

Table 1 Demographic information for 123 cases

		Frequency (N)	Percent (%)
Gender			
	Female	83	66.4
	Male	40	32
Age			
	Under Age 20	3	2.4
	Age 21-25	32	25.6
	Age 26-30	23	18.4
	Age 31-35	22	17.6
	Age 36-40	5	4.0
	Age 41-45	11	8.8
	Age 46-50	18	14.4
	Over Age 51	9	7.2
Academic Status			
	Undergraduate	26	20.8
	Master	86	68.8
	Specialist	4	3.2
	PhD	5	4.0
	Certificate Program	2	1.6

Measures

Motivation. In this study, we conceptualized academic motivation as intrinsic goal orientation, self-efficacy, and task value. To measure those constructs, we adapted 4 items on intrinsic goal orientation, 8 items on self-efficacy, and 6 items on task value from the Motivated Strategies for Learning Questionnaire. We modified the scale so that the items could be specific to learning in online courses. The final scale consisted of eighteen 7-point Likert items. The Cronbach α

reliability estimates from our data were .84 for the intrinsic goal orientation subscale, .93 for the self-efficacy subscale, and .93 for the task value subscale.

Social ability. Author (in press) developed the Social Ability Instrument consisting of 20 items aimed at measuring students' experience and perception of social interaction in online learning environments. They reported that three factors, social navigation (6 items, $\alpha = .92$), co-presence (4 items, $\alpha = .84$), and social connectedness (2 items, $\alpha = .95$) accounted for 65.69% of the variance in the measure. In addition to the 20 items, we expanded the instrument to 42 items to explore additional issues of suggested by the extant literature: security, communication concerns, and purposive interaction.

Data analysis

Question 1 was addressed through a principal factors extraction with oblique rotation on 42 items from the social ability instrument. Prior to principal factors extraction, principal components extraction was used to estimate the number of factors and presence of outliers. After deleting outliers, we used 107 cases for subsequent principal factors extraction. Question 2 was examined through canonical correlation analysis to reveal the relationships between motivational beliefs and social ability factors. Questions 3 was addressed with multivariate multiple regression by using 3 motivational beliefs as independent variables and 5 social ability factors as dependent variables.

FINDINGS

Social ability and factors

The exploratory factor analysis resulted in 5 factors accounting for 35.26%, 9.59%, 7.03%, 4.49%, and 3.77% of the variance, respectively, and 60.15% of total variance. Thirty-six items, whose factor loadings were greater than 0.4, were retained The five factors shown in table 2 are characterized as social presence with students, social presence with the instructor, social navigation, concerns for social interaction, and confidence in social interaction with Cronbach's coefficient alpha respectively of .93, .91, .88, .83, and .86.

Table 2 Factor loading of social ability instrument items

Item	Factor loading
Factor 1: social presence with students	
8. My online interactions with other students seem personal	.779
9. When I log on I am usually interested in seeing what other students are doing or have done	.783
10. My interactions with other students are sociable and friendly	.829
11. The actions of other students in the course are easily visible in our online system	.650
12. I feel comfortable expressing my feelings to other students	.737
13. In my interactions with other students I am able to be myself and show what kind of classmate I really am	.864
15. I trust the other students in this course to help me if I need it	.668
17. I feel connected to other students in this course	.872
19. I feel like I am a member of a group during the course activities	.674
20. When I see that other students are confused I offer help	.536
29. Interacting with other students in the course helps me learn more efficiently than if I were working alone	.580
Factor 2: social presence with the instructor	
1. My online interactions with the instructor seem personal	.797
2. When I log on I am usually interested in seeing what the instructor is doing or has done	.595
3. My interactions with the instructor are sociable and friendly	.846
4. The actions of the instructor in the course are easily visible in our online system	.733
5. I feel comfortable expressing my feelings to the instructor	.822
6. In my interactions with the instructor I am able to be myself and show what kind of student I am really am	.698
16. I trust the instructor in this course to help me if I need it	.731
18. I feel connected to the instructor in this course	.632
Factor 3: Social Navigation	
22. Actions by the instructor in the course usually influence me to do further work (such as logging in more often or posting more messages)	.553
23. The actions of other students in the course influence the quality of my work (such as trying to write better messages or working more carefully)	.671
24. The actions of the instructor in the course influences the quality of my work (such as trying to write better messages or working more carefully)	.695
25. Knowing that other students in the course are aware of my work usually influences how hard I work and the quality of my work	.567
26. Knowing what other students in the course have done helps me know what to do	.558
27. Interacting with the instructor helps me accomplish assignments with higher quality than if I were working alone	.430
31. If a problem arises with other students or the instructor while trying to accomplish a course task I can resolve it	.446
Factor 4: Concerns for social interaction	
34. I am concerned that my writing ability limits how effective I can be in this course	.572
37. I feel uncomfortable with the amount of information about myself that I had to share with other students in this course	.866
38. I feel uncomfortable with the amount of information about myself that I had to share with the instructor in this course	.902
41. I am concerned that people I do not know or trust may be looking at my work	.622
42. I feel uncomfortable interacting with others in the course because these interactions are recorded	.748
Factor 5: Confidence in social interaction	
32. The way we interact with each other in the course is a good fit for the way I like to learn	.465
33. I am able to use the courseware tools to effectively communicate my ideas.	.486
36. I feel comfortable asking questions or raising issues	.593
39. I feel in control of how to use my time to meet the requirements of this course.	.906
40. I feel in control of my work and learning	.978

Correlation of motivation and social ability

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To answer question 2, Canonical Correlation Analysis was conducted and the result is shown in table 3. Motivational belief and social ability factors were related by the first canonical variate generated in the analysis. The first canonical correlation was moderately high (0.68) and accounts for a substantial amount of variance (45.62 %).

Table 3. Canonical Correlation Analyses of Three Motivational Beliefs and Five Social Ability Factors (N = 103)

	1st Canonical Variate (cv)	
Variables	SC	CC
Motivation (X) Set		
Intrinsic Goal	.7120	.2976
Self-Efficacy	.7367	.3953
Task Value	.8720	.5698
Prop. Var	.61	
Redundancy	.28	
Social Ability (Y)		
F1:SP-Students	.7688	.2406
F2:SP-Instruct	.8214	.3346
F3:Soc Navigation	.6566	.2762
F4:Concerns	.2185	.0369
F5:Confidence	.8174	.4292
Prop. Var	.48	
Redundancy	.22	
Rc	.6754	
R^2c	.4562	

Note: F values of multivariate tests of Pillais, Hotellings and Wilks reached the .001 significance level. Structural coefficients (SC), standardized canonical coefficients (CC), proportion of variance (PV), redundancy, canonical correlations (Rc), and squared canonical correlations (R^2c)

Based on the correlation of Canonical variate 1 with the both sets of variables, the results suggest that students whose scores were high on intrinsic goal orientation, self-efficacy, and task value would be likely to have high scores for the SP-Instructor, SP-Students, Social Navigation, and Confidence. It also implies that students who had high scores in these high loading social ability factors would also be likely to have high scores in intrinsic goal orientation, self-efficacy, and task value.

Effects of motivation on social ability

Multivariate multiple regression provided a test of how well motivational beliefs explain social ability factors. Table 4 shows that intrinsic goal orientation, self-efficacy, and task value collectively accounted for 27.7%, 28.0%, 17.7%, 4.3%, and 28.8 % respectively of the variance of SP-Students, SP-Instructor, Social Navigation, Concern, and Confidence . Significant relationships for each social ability factor with motivational constructs were found. Higher students' perceived value of learning tasks predicts higher appreciation of the instructor's social

presence, greater likelihood of using social navigation, and more confidence in social interaction. In addition, higher self-efficacy of their learning in online learning environments predicts higher appreciation of the instructor's social presence, less concerns for social interaction, and more confidence in social interaction. Finally, if students have more intrinsic goal motivation, they tend to have higher appreciation of other students' social presence and higher confidence in social interaction.

Table 4. Multivariate multiple regression

DV	Independent Variable	B	SEB	β	t	Sig.
Social presence for students						
	Intrinsic goal orientation	.088	.026	.345	3.375	.001*
	Self-efficacy	.019	.015	.120	1.254	.213
	Task Value	.037	.019	.201	1.973	.051
Social presence for the instructor						
	Intrinsic goal orientation	.035	.026	.135	1.336	.185
	Self-efficacy	.032	.015	.199	2.096	.039*
	Task Value	.066	.019	.354	3.504	.001*
Social navigation						
	Intrinsic goal orientation	.031	.027	.123	1.126	.263
	Self-efficacy	.017	.016	.110	1.080	.283
	Task Value	.056	.020	.310	2.855	.005*
Concerns for social interaction						
	Intrinsic goal orientation	-.027	.030	-.104	-.889	.376
	Self-efficacy	.046	.018	.288	2.616	.010*
	Task Value	.002	.022	.013	.113	.911
Confidence in social interaction						
	Intrinsic goal orientation	.044	.025	.178	1.759	.082
	Self-efficacy	.040	.014	.266	2.802	.006*
	Task Value	.045	.018	.257	2.544	.013*

Note. For social presence with student, R^2 = .277; for social presence with the instructor, R^2 = .280; for social navigation, R^2 = .177; for concerns for social interaction, R^2 = .043; for confidence in social interaction, R^2 = .288.
*p < .05

Results and Discussion

In contrast to previous study, the current study found five factors of social ability, which are social presence with students, social presence with instructors, social navigation, concerns for social interaction, and confidence in social interaction. Additionally, our findings indicated social presence and social connectedness, which were two distinct factors in previous study, were loaded on one factor- social presence. It shows that social presence and social connectedness may be two facets of one dimension. Moreover, having two social presence factors in the findings suggests that differences between the nature of social ability with the instructor and with other students are substantial.

	Author (in press)	The present study
Dimensions	1. Social presence	1. Social presence/connectedness-students
		2. Social presence/connectedness-instructor
	2. Social navigation	3. Social navigation
	3. Social connectedness	
		4. Concerns for social interaction
		5. Confidence in social interaction

Canonical correlation analysis results showed three motivational beliefs: intrinsic goal orientation, self-efficacy, and task value were positively and strongly correlated to the social ability factors, except for concerns for social interaction. Although the correlation between concerns for social interaction and the canonical variate is less than .3, the concerns factor was included in the regression analysis because of its potential for explaining limitations of the social experience of the learning environments. The results of multivariate multiple regression indicate that not every motivational construct significantly contributes to explaining the variance of the multiple social ability factors. Specifically, social presence with students is only explained by intrinsic goal orientation, social navigation is only explained by task value, and concern for social interaction is only explained by self-efficacy. Social presence with the instructor is explained by both self-efficacy and task value. Confidence in social interaction is accounted for by intrinsic goal orientation, self-efficacy, and task value.

The findings from this study suggest that social interaction and collaborative activity in online learning is influenced by motivation but that the influence is complex and differentiated by types of motivation. Also, additional studies are needed to further explicate social ability in online learning and continue to improve the social ability instrument. The full paper will provide further discussion of the meaning and implications of the relationships found.

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