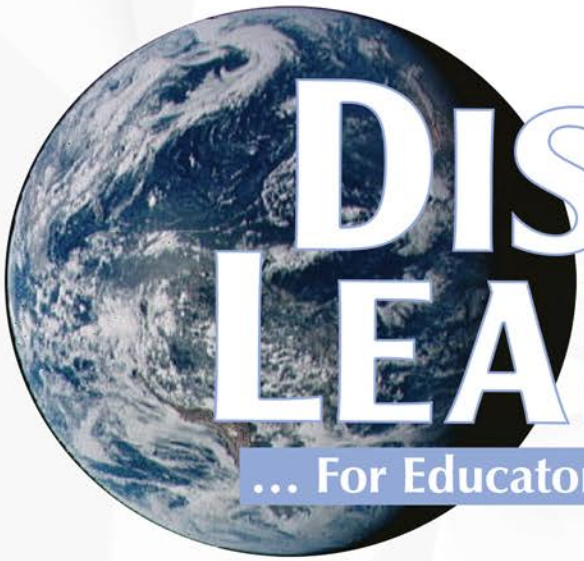
An Official Publication of the United States Distance Learning Association



Volume 19, Number 4, 2022

DISTANCE LEARNING

… For Educators, Trainers, and Leaders

ARTICLES

COLUMNS

USDLA United States Distance Learning Association

in partnership with:

IAP INFORMATION AGE PUBLISHING

DISTANCE LEARNING

ARTICLES

SHORT PAPER

COLUMNS

EDITOR
Michael Simonson
simsmich@nova.edu

EMERITUS EDITOR
Charles Schlosser

MANAGING EDITOR
Kathleen Hagen
khagen@nova.edu

COPY EDITOR
Shirley Walrod
shirleywalrod@gmail.com

ASSISTANT EDITOR FOR SOCIAL MEDIA
Deborah Seepersaud
dseepersaud@barry.edu

ASSOCIATION EDITOR
Pat Cassella
pcassella@usdla.org

PUBLISHER
Information Age Publishing
216 W. North Main Street
2nd Floor
Waxhaw, NC 28173
(704) 752-9125
www.infoagepub.com

ADVERTISING
United States Distance Learning Association
10 G Street, NE Suite 600
Washington, DC 20002
202-248-5023

EDITORIAL OFFICES
Fischler College of Education
and School of Criminal Justice
Nova Southeastern University
3301 College Ave.
Fort Lauderdale, FL 33314
954-262-8563
FAX 954-262-3724
simsmich@nova.edu

PURPOSE
Distance Learning, an official publication of the United States Distance Learning Association (USDLA), is sponsored by the USDLA and by Information Age Publishing. *Distance Learning* is published four times a year for leaders, practitioners, and decision makers in the fields of distance learning, e-learning, telecommunications, and related areas. It is a professional magazine with information for those who provide instruction to all types of learners, of all ages, using telecommunications technologies of all types. Articles are written by practitioners for practitioners with the intent of providing usable information and ideas for readers. Articles are accepted from authors with interesting and important information about the effective practice of distance teaching and learning.

SPONSOR
The United States Distance Learning (USDLA) is the professional organization for those involved in distance teaching and learning. USDLA is committed to being the leading distance learning association in the United States. USDLA serves the needs of the distance learning community by providing advocacy, information, networking and opportunity. www.usdla.org

INFORMATION AGE PUBLISHING
216 W. North Main Street,
2nd Floor
Waxhaw, NC 28173
(704) 752-9125
www.infoagepub.com

SUBSCRIPTIONS
Members of the United States Distance Learning Association receive *Distance Learning* as part of their membership. Others may subscribe to *Distance Learning*.
Individual Subscription: $60
Institutional Subscription: $175
Student Subscription: $40

***DISTANCE LEARNING* RESOURCE INFORMATION:**
Visit http://www.usdla.org/html/resources/dlmag/index.htm
Advertising Rates and Information:
202-248-5023
Subscription Information:
Contact USDLA at
617-399-1770
info@usdla.org

DISTANCE LEARNING
is indexed by the Blended, Online Learning and Distance Education (BOLDE) research bank.

DISTANCE LEARNING JOURNAL
PUBLISHING GUIDELINES
EMAIL SUBMISSIONS

MANUSCRIPT PREPARATION GUIDELINES

Articles are accepted from authors with interesting and important information about the effective practice of distance teaching and learning. No page costs are charged authors, nor are stipends paid. Two copies of the issue with the author's article will be provided. Reprints will also be available.

1. Manuscripts should be written in Microsoft Word, saved as a .doc file or docx file, and sent using email.

2. *Single* space the entire manuscript. Use 12-point Times New Roman (TNR) font.

3. Margins: 1" on all sides.

4. Do not use any subheadings, page numbers, or embedded commands. Documents that have embedded commands will be returned.

5. Include a cover sheet with the paper's title and with the names, affiliations and addresses of all authors. High resolution professional photographs of all authors should be included and should have a **file size larger than 500kb**.

6. Submit the paper via email attachment that is clearly marked. The name of the manuscript file should reference the author. Submissions should be sent marked ATTENTION *Distance Learning* submission.

7. Send email submissions to:

simsmich@nova.edu
Michael R. Simonson
Editor

Distance Learning journal
Fischler College of Education and
School of Criminal Justice
Nova Southeastern University
4118 DeSantis Building
3301 College Avenue
Fort Lauderdale, FL 33314

The Manuscript

Word Processor Format
Manuscripts should be written in Microsoft Word.

Length
There is no page length. The average manuscript is between 3,000 and 5,000 words.

Text
Regular text: 12 point TNR, left justified.

Do not type section headings or titles in all-caps, only capitalize the first letter in each word of a title. Allow one line of space before and after each heading. Indent, 0.5", the first sentence of each paragraph.

Figures and Tables
Figures and tables should fit width 6½" and be incorporated into the document.

Page Numbering
Do not include or refer to any page numbers in your manuscript.

Graphics
We encourage you to use visuals—pictures, graphics, figures, charts—to help explain your article. Graphics images (.jpg) should be included at the end of your paper. Graphic images should be at least 500 kb in size.

In Upcoming Issues

PRUTE: A Model for Online Delivery of Majors and Nursing Microbiology Laboratories During the COVID-19 Pandemic Emergency	*Gregory W. Buck, Derrick J. Chelikowsky, Stella M. Doyungan, Mohammad Emad Tahtamouni, and Jeffrey W. Turner*
Creating a Tailored Info App to Promote Self-Management Skills in Persons With Chronic Health Conditions: Development Strategies and User Experience	*Neil Patel, Drenna Waldrop, Raymond L Ownby, and Nell Hodgson*
Strategies to Promote Academic Integrity for Graduate Nursing Students in an Online Learning Environment	*Karin Smith, Amy Grugan, Michelle Nielsen Ott, Rachel Borton, and Sokonie Reed*
The Best of Errol Sull	*The best "Ask Errol" and "Try This" columns*

Exploring Levels and Patterns of Social Presence in Asynchronous Online Discussions

A Longitudinal Study

Qi Wu, Tiffany A. Koszalka, and Zhijuan Niu

A positive online learning community fosters active social interaction and deep social connectedness among learners. Social presence in asynchronous online discussions (AODs) is critical to forming an active learning community. Observation techniques, content analysis using the community of inquiry framework, and social network analysis were employed in this longitudinal study exploring patterns of social presence behaviors in AODs across two online courses over two semesters for a single cohort of graduate students. Findings suggested that varied instructional stages and instructor involvement were crucial factors in learners achieving higher social presence in AODs. Learner interaction frequency and

Qi Wu,
School of Education, Syracuse University,
259 Huntington Hall, Syracuse, NY 13244.
Email: qwu16@syr.edu

Tiffany A. Koszalka,
School of Education, Syracuse University,
264 Huntington Hall, Syracuse, NY 13244.
Email: takoszal@syr.edu

several postings did not adequately represent levels of social presence. Techniques are recommended to prompt learner engagement in AODs to scaffold meaningful online learning experiences.

Introduction

Without a supportive online environment, engaging learners in deep-level online learning is challenging (Ding, 2019). Social learning strategies have prompted learner engagement in online courses to build a more supportive and effective learning community (Liu et al., 2007, Phirangee, 2016). Asynchronous online discussions (AODs) have evolved as a widely used instructional technique to prompt social interactions and information exchanges during online learning (Gao et al., 2013; Koszalka et al., 2021). Participating in AODs allows learners ample opportunities to interact and communicate by sharing their thoughts, asking questions, and giving feedback (Yang et al., 2010). Social presence (SP), a sense of belonging among participants in a community of inquiry, indicates effective learning in online contexts (Garrison & Akyol, 2013). The belonging suggests a willingness to participate, comfort in participating, and the ability to learn more efficiently with others. Studies have suggested that, in online environments, a higher perception of SP usually indicates a better ability to achieve the desired collaborative learning-related outcomes (Reio & Crim, 2013). Learners perceive socially absent online environments as impersonal, where they are often less ready to share knowledge. Thus, a lack of SP and connection may frustrate learners, make them unsatisfied with a course, and be less engaged in deep-level learning (Reio & Crim, 2013). To prompt perceptions of a fulfilling social learning environment that will result in a positive online learning experience, it is critical to foster a strong sense of SP among learners in online courses.

Zhijuan Niu,
School of Education, Syracuse University,
259 Huntington Hall, Syracuse, NY 13244.
Email: zhniu@syr.edu

Though considerable efforts have been devoted to studying the importance of establishing a SP in online learning, few studies have more fully explored the nature and development of SP in the online learning environment (Lowenthal & Dunlap, 2018, 2020; Picciano, 2002; Rourke & Kanuka, 2009; Swan & Shih, 2005). Most research on SP evaluated and measured learner perceptions of SP by employing self-report surveys and post-learning experience interviews. These techniques neglected to measure the presence and magnitude of actual SP behaviors. Empirical evidence suggests there is not always consistency between learner self-reports and their actual behavioral interaction (Picciano, 2002). Thus, studies using only perception self-reports may have inflated findings.

Social presence in the online learning environment should be viewed more scru-

pulously, using, for example, observational techniques and social network analysis to map patterns and characterize the attributes of online interaction. Also, given that most SP studies were short-term periods within the same context (or course) with different participants, additionally investigating that explores the nature and development of SP over time and across different contexts may be helpful to unpacking this complex environment. By conducting a longitudinal study beyond the self-reporting strategy, we intended to explore the patterns and levels of SP among the same cohort of graduate students in several AOD sessions across two online courses over two semesters. Observation techniques, document analysis, and social network mapping were employed to distinguish the behavioral interaction characteristics and development of social interactions and SP in the online environment.

Literature Review

Social Interaction in Asynchronous Online Discussions

Social interactions can be recognized as how learners and instructors exchange knowledge and thoughts. An online learning community where learners can learn with each other's thoughts and perspectives through social interactions is beneficial to their learning experiences (Dabbagh, 2005). Since the success of online courses is often directly related to the quantity and quality of interactions (Picciano, 2002), the instruction on social interaction scaffolding and opportunities should be deliberately designed to foster interaction in specific ways through timely and focused postings and responses in AODs (Bernard et al., 2009).

The community of inquiry framework (CoI) provides measures for researchers to investigate interactions in online learning environments and choose possible strategies to increase learning experiences and outcomes (Arbaugh et al., 2008; Garrison et al., 2000). The CoI survey was employed in the study by Cho and Tobias (2016), where learner interactions in different online discussion conditions were investigated. The results suggested that interaction with the instructor was the most important factor explaining SP. Huang et al. (2017) used the CoI SP subscale to examine learner interactions and SP in different learning stages, confirming the crucial role of interaction in forming a learner's SP in online learning. Though these studies suggested that the CoI survey was a valid, reliable, and efficient measure of social interaction and its association with a SP, it is worth mentioning that self-reporting is not always accurate. Thus, it is advantageous also to employ other methods to confirm, validate, and provide more sophisticated ways to examine and analyze learner interaction in online courses (Picciano, 2002).

Social interaction and presence are closely related concepts, and the latter has often been used synonymously. However, a recent, more precise definition clarifies the difference in the connotation of social interaction to a perception of connectedness (Huang et al., 2017). The interaction may demonstrate presence. Nevertheless, in posting and interacting in an online environment, learners may not necessarily feel a presence or belonging to a group (Picciano, 2002). Presence is a complex variable warranting further explorations using different research approaches beyond self-reporting.

Social Presence in Asynchronous Online Discussions

Social presence is "the ability of participants to identify with the group or course of study, communicate purposefully in a trusting environment, and develop personal affective relationships progressively by way of projecting their individual per-

sonalities" (Garrison, 2009, p. 32). According to the CoI framework, the process of creating an online learning environment that promotes higher order thinking and deep levels of learning consists of the development and interactions among three interrelated presences: SP, cognitive presence, and teaching presence (Garrison & Arbaugh, 2007; Garrison et al., 2000). Cognitive presence refers to the inquiry process that fosters deeper thinking about content, leading the learner to construct meaningful learning (Garrison et al., 2000). Teaching presence consists of faculty-directed instruction for effective learning, pedagogical methods, and course design (Swan et al., 2008). Social presence has been used to understand learners' interactive behaviors in online environments (Saadatmand et al., 2017). It is conceptualized as a combination of affective responses (AR), interactive responses (IR), and cohesive responses (CR; Rourke et al., 1999). In addition, specific indicators were developed for SP categories to help researchers identify observable SP instances and to analyze the AOD transcripts (Rourke et al., 2001).

Studies have focused on techniques to help establish and enhance SP in AODs to gain more meaningful online learning experiences. Empirical evidence from Chen and Liu's (2020) study suggested that assigning different sizes of online discussion groups and specific discussion requirements generated different SP frequencies. Similar results also showed in Akcaoglu and Lee's (2016) study that small and permanent discussion groups augment learners' perception of SP in AODs. Lee and Huang's (2018) study comparing a regular 16-week semester online with an intensive 5-week online course also found that providing more interaction opportunities (longer time) helped learners to develop a higher SP.

Beyond these studies, instructor involvement was a critical aspect that influenced how learners interacted and perceived SP in AODs. While Costley (2015) found that increasing the amount of instructor control over the AODs decreased the amount of SP within the learners' posts, Lowenthal and Dunlap's (2018) study demonstrated that learners were more interested in connecting with their instructors than their peers. These contradictory findings suggested that SP is more complicated than expected. Moreover, Lowenthal and Dunlap's (2020) study identified instructional tasks and previous relationships as other situational variables that influenced SP in AODs. Thus, essential design factors, including group size, amount of interaction time allocated, instructor role, instructions that guide discussions, instructional tasks, and peer relationships may affect the establishment and maintenance of SP within AODs.

Social presence within online environments significantly influences learners' learning experiences. However, how educators should facilitate and examine the establishment and the extent of SP to help learners better achieve a meaningful online learning experience is less certain. Critical research is still needed to understand the nature and development of SP in online courses.

The Current Study

This study uses longitudinal field observations that followed the same cohort of graduate students who participated in the same two online graduate-level courses' AODs, over two semesters. A multiple instrumental case study design was used, and "multiple cases were described and compared to provide insight" (Creswell, 2002, p. 465). The fall semester course focused on learning outcomes associated with introductory instruction on educational technologies used in instructional settings. In contrast, the spring semester course focused on the fundamentals of educational project management, support-

ing learners in developing competencies to manage educational projects.

The AODs, as the major activities in both courses, engage learners in idea exchange and demonstrate evidence of learning course content. Both courses' AODs began in the second week with an introduction to the course objectives, content structure, assignments, and learners' responsibilities. Prerequisite readings and prework were shared in the course management system to prepare learners for content-related discussions. Each AOD opened for 1 to 2 weeks and required learners to post at least one initial response to a moderator question and two content-substantial responses to peers. In both courses, AODs were self-monitored with limited instructor involvement, and learners were graded based on participation level and content focus. Although each of the AODs covered different content topics, all AOD threads were prompted with surface and deep-level content questions. Learners were required to demonstrate their learning outcomes from prework and think reflectively when articulating their ideas and interpretations. Table 1 presents the summaries of the two courses and their AOD designs.

Research Questions

The specific research questions included:

1. What were the patterns of SP identified within a single cohort of students in AODs across two online courses over two semesters?
2. What were the levels of SP noted within a single cohort of students in AODs across two online courses over two semesters?
3. How did social interaction and SP emerge in AODs across two online courses over two semesters? Did they remain consistent or appear different?

Methodology, Data Collection, and Analysis

The first case consisted of 5 AOD introductory educational technology topics, while the second included 5 AOD introductory project management topics. An IRB-exempt status was also given to this study. The AOD scripts were downloaded and used as the primary analysis data.

Transcript analysis of learners' AOD postings was applied using the categories and indicators defined in the CoI framework. SP was analyzed by coding for affective, interactive, and cohesive responses

Table 1. Summary of Fall 2020 and Spring 2021 Courses

	Fall 2020	Spring 2021
Course	Educational technology	Introduction of project management
Duration	16 weeks	16 weeks
AOD Design		
Case 1 topic	Online resources for educators	Project management definitions and tools
Case 2 topic	Personal broadcasting	Being an accidental project manager
Case 3 topic	Mobile technology and learning	Social behavioral stages and team management style
Case 4 topic	Web-based teaching and learning tools	Emotional intelligence of team members
Case 5 topic	eLearning	Reflections on project management
Moderator	Self-monitored by students with limited instructor involvement	
Requirement	Minimally, one initial response post and at least two responses to peers	

(Swan, 2003; Hughes et al., 2007). See the appendix. MAXQDA software was used to code and analyze the data. The analysis unit combining the thematic unit's flexibility with the syntactical unit's reliability is the most appropriate (Rourke et al., 1999). A more accurate frequency of SP behaviors can be captured using a smaller unit of analysis, which can also show the logic of indicators and preserve identification consistency. Thus, this study coded SP behaviors at the sentence level, whereby a single sentence could include multiple SP behaviors. Through an iterative coding practice process, two coders finalized the coding scheme with an interrater agreement of 0.75. The descriptive analysis presented the total number of postings, sentences, and instances of SP at both category and indicator levels in response to the question about patterns of SP behaviors. Social presence levels (average SP per sentence) were calculated and compared across two courses by individual AOD and learner, respectively. Social network mapping analysis was conducted through the Gephi program to investigate and visualize the interaction patterns and relationships among the same cohort of students across two courses. All figures are included at the end of the paper.

Results

Participants

The participants, the same single intact cohort of graduate students (N = 12), completed introductory educational technology survey-type course in the fall of 2020 and an introduction to educational project management course in the spring of 2021 for a master of science instructional design program at a private northeastern university in the United States. The average age of the participants was 44 years old, and most were male (80%). Most participants were on active-duty military (80%), while the others were veterans (20%). Participants had taken an average of four or more previous online courses. In addition, half of the participants had some experience using educational technologies (50%), followed by participants who had sufficient experience with educational technologies (25%) and those who had little to no experience with educational technologies (25%). All participants completed consent forms permitting us to launch content analysis on their online discussion postings from both courses.

Learner Participation

Five AOD cases from each of the two online courses were analyzed in chronological order. Learner participation in both courses was regularly recorded in Table 2. Compared to the fall semester, learners posted more frequently (*Npostings* = 289) but wrote fewer sentences (*Nsentences* = 1,698) in the spring semester. The number of learner postings among five AOD cases ranged from 46 to 71 in the fall course and from 52 to 67 in the spring course. Learners engaged and wrote the most for AOD Case 5 in the fall course, whereas they posted the most for Case 3 and wrote the most for Case 5 in the spring course. Learner engaged the least for AOD Case 2 in both courses.

Descriptive statistics are reported in Table 3 at the SP category and indicator level to address the first research question.

Social Presence Category Pattern

Both courses revealed that CR presented the most and had the highest overall mean scores (*M*fall = 98.6, *M*spring = 101.2), followed by IR (*M*fall = 90.2, *M*spring = 76.0), and AR (*M*fall = 37.6, *M*spring = 51.4). A similar SP categorical pattern was also found in Lowenthal et al.'s (2020) study, where affective indicators were used the least (1373 times) within their sample compared to interactive (2581 times) and cohesive indicators (2454 times). Across all the AODs in the fall term, the

Table 2. Summary of Students' Participation for Fall 2020 and Spring 2021 AODs

	Fall 2020	Spring 2021
Number of students	12	12
Total number of postings (sentences)	276 (2,054)	289 (1,698)
Case 1	63 (467)	60 (316)
Case 2	46 (331)	52 (253)
Case 3	46 (383)	67 (369)
Case 4	50 (332)	55 (325)
Case 5	71 (541)	55 (435)
Average number of postings (sentences)/case	55 (411)	58 (340)

Table 3. Descriptive Statistics of Social Presence for Fall 2020 and Spring 2021 AODs

	Fall 2020			Spring 2021		
Category and Indicator	***Freq***	***M***	***SD***	***Freq***	***M***	***SD***
Affective Responses (AR)	**188**	**37.6**	11.87	**257**	**51.4**	16.17
Paralanguage	58	11.6	7.77	82	16.4	4.28
Emotion	30	6	3.39	14	2.8	2.17
Humor	20	4	1.58	21	4.2	2.95
Self-disclosure	80	16	7.58	140	28	13.45
Interactive Responses (IR)	**451**	**90.2**	17.12	**380**	**76.0**	14.02
Acknowledgment	129	25.8	4.76	127	25.4	7.64
Agreement/disagreement	87	17.4	7.09	63	12.6	2.97
Invitation	61	12.2	9.88	35	7	3.74
Complimenting, expressing appreciation	174	34.8	9.73	155	31	6.4
Cohesive Responses (CR)	**493**	**98.6**	24.55	**506**	**101.2**	27.66
Greetings and salutations	27	5.4	2.97	13	2.6	.55
Vocatives	234	46.8	4.91	248	49.6	13.69
Group references/inclusivity	214	42.8	18.83	245	49	15.44
Embracing the group	18	3.6	5.86	0	0	0
Social Presence	**1,132**	**226.4**	30.45	**1,143**	**228.6**	36.61

mean score difference between IR and CR (*M*interactive = 90.2, *M*cohesive = 98.6) was relatively minor compared with the ones between these two categories and the AR (*M*affective = 37.6). Such mean score difference between CR and AR suggested that learners had a stronger ability to identify with the group and share commitment in achieving learning goals, but this does not map their self-projection into and within the learning community (Garrison, 2009; Rourke et al., 1999).

Social Presence Indicator Pattern

Given that very little previous SP research has reported findings at the indicator level (Lowenthal et al., 2020), this study looked more deeply at the occurrence and frequency of individual SP indicators across two courses. According to the comparisons of SP indicators, humor was used least frequently in the affective category—the least used indicator in Lowenthal et al. (2020) study, followed by emotion; complimenting was used the most frequently in the interactive category, followed by acknowledgment. Group reference and vocative—one of the top three indicators in Lowenthal et al.'s (2020) study, were the two SP indicators used the most and almost at the same frequency in the cohesive category. In contrast, greetings and embracing the group were used the least.

Levels of Social Presence Categories

To address the second research question, comparisons between the two courses were launched by calculating the levels of SP categories and indicators. Based on Rourke et al.'s (1999) SP density, we calculated the SP level by averaging the SP instances of each sentence (as opposed to per word in Rourke et al., 1999). Detailed results were presented in Table 4, where we found a higher overall SP level in the spring course (0.673) than in the fall course (0.551). More specifically, all three SP categories in the spring term had higher SP levels than the fall term: affective responses (fall = 0.091; spring = 0.151), interactive responses (fall = 0.220; spring = 0.223), and cohesive responses (fall = 0.240; spring = 0.300). Within the same cohort of students, the same level of substantial increases was found in both affec-

Table 4. Levels of Social Presence Across Fall 2020 and Spring 2021 Courses

	Fall 2020		Spring 2021		
Category and Indicator	**Freq**	**Avg.**	**Freq**	**Avg.**	**Diff.**
Affective Responses	**188**	**0.091**	**257**	**0.151**	**0.061**
Paralanguage	58	0.028	82	0.048	0.02
Emotion	30	0.014	14	0.008	–0.006
Humor	20	0.009	21	0.012	0.003
Self-disclosure	80	0.039	140	0.082	0.043
Interactive Responses	**451**	**0.220**	**380**	**0.223**	**0.003**
Acknowledgment	129	0.063	127	0.075	0.012
Agreement/disagreement	87	0.042	63	0.037	–0.005
Invitation	61	0.030	35	0.021	–0.009
Complimenting, expressing appreciation	174	0.085	155	0.091	0.006
Cohesive Responses	**493**	**0.240**	**506**	**0.300**	**0.060**
Greetings and salutations	27	0.013	13	0.008	–0.005
Vocatives	234	0.113	248	0.150	0.037
Group references/inclusivity	214	0.104	245	0.144	0.040
Embracing the group	18	0.009	0	0	–0.009
Social Presence Total	**1,132**	**0.551**	**1,143**	**0.673**	**0.122**