Establish a Link Between HEXACO Personality Traits and Emoji Use

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Abstract

Communication is essential for human lives and it has two major parts; verbal and non-verbal communication. This study focuses on, one of the nonverbal communication categories termed as Computer Mediated Communication (CMC). The aim of the study is to conduct two surveys, emoji survey and personality traits inventory for sample of participants in different country. Based on the survey results, final aim to estimate the association between user personality traits and emoji by using correlation analysis. The results reveal that the country base analysis on the personal traits and emoji that have shown the significant and strong relationship between the HEXACO personality traits.

Keywords: CMC, Correlation, Emoji, HEXACO

1. Introduction

CMC associated with the text-based communication, very early. But, gradually it has become more visual, colorful and user-friendly communication way, with the use of emoji [2]. Before the origin of small image type emoji, there was a portrayal of facial expressions, manifested by different associations of keyboard characters and used in CMC to express the writer's feelings called as emoticons [8].

Currently, emoji are popular in all over the world and used across numerous digital platforms and contexts [5-7]. Because of the tremendous popularity of emoji; the Oxford university press has nominated an emoji as "the word of the year" in 2015. It was "face with joy tears" emoji.

Technology (ICT). Asynchronous and Synchronous are the prime types of CMC. Asynchronous is not focus on online and it has some delay between feedbacks; but synchronous is an online way and it is very much close to face-to-face communication [4] such as; Messenger, Skype, Google Talk, etc.

2. Proposed System

In this study, user personality assessed by using, one of the prominent non-verbal component of CMC called as emoji. For that purpose, conducted two surveys; emoji survey and personality traits inventory for the sample of 46 participants in two different Khin Ei Ei Chaw University of Information Technology

countries, Thailand, and Myanmar. Emoji survey included 65 universal standards (Unicode/ISO 10646) basic face type emoji and asked to score participants' self-identification with emoji by using 5 point Likert scale. The reason to select face type emoji is the highest global emoji usage. According to SwiftKey emoji report in 2015, nearly 59% of emoji usage was face type emoji category

2.1. Personality Survey

Participants were asked to respond for two survey questionnaires; emoji identification questionnaire and HEXACO 100 question personality trait inventory. Both surveys were online. HEXACO personality inventory, directly utilized with participants on the website; http://hexaco.org/hexaco-online and after completing the HEXACO test, participants were asked to send back the downloaded result pdf. Since it has used HEXACO-PI-R authors original website (http://hexaco.org/hexaco-online)

2.2. Emoji Survey

In this study, focused on Unicode-ISO/IEC 10646 emoji, and based on usage of emoji types, selected basic face type emoji set from Unicode full emoji data (http://unicode.org/emoji/charts/full-emoji-list.html).

3. Methodology

3.1. Correlation Analysis

As mentioned above major objective of this study is to ascertain the relationship between the personality traits and the emoji usage in the online communication. Since this study mainly on deriving the relationships between variables, it has conducted correlation analysis on the variables under concern.

Through correlation analysis [3], it measures the strength of the relationship between two variables. In stream of correlation analysis, in order to ascertain correlation coefficient two tests are widely applied,

- Pearson Correlation analysis
- Spearman Rank Correlation

In order to conduct Pearson correlation analysis following assumptions should met,

- Interval or ratio variable
- Linear relationship
 - Normal Distribution

If, either one of the breached it is recommended to use Spearman Rank Correlation. For the purpose of the study it has used Pearson correlation analysis where the variables under consideration is meeting the above assumptions. In the issue on the distribution of the variables, it has presumed as normally distributed based on the central limit assumptions.

Pearson correlation analysis conducted based on the following formula (Cowan, 1998):

$$r = \frac{n(\sum xy) - (\sum x)(\sum y)}{\sqrt{[n\sum x^2 - (\sum x)^2][n\sum y^2 - (\sum y)^2]}}$$
(1)

Where,

x = emoji (65 face type of emoji) and y = HEXACO (six type of personality traits).

The Pearson correlation gives an indication on the strength of the relationship between the two random variables x and y. The sign of the correlation coefficient is positive if the variables are directly related and negative if they are inversely related.

If $r_{xy} = 0$, then x and y are said to be uncorrelated. The closer the value is to1, which means that strong correlation.

In order to make inferences on the population based on the sample, it has conducted a hypothesis testing procedure on the ascertained correlation coefficients.

Hypothesis testing has conducted at the 5% level of significance on the following hypothesis:

4. Analytical Results and Discussion

To test the hypothesis that highlight possible correlations between personality traits measured with HEXACO model and usage of emoji in online communication. In this analysis, participants' attitude towards a sense of emoji usage, personality traits, their demographics and different countries based.

4.1. Descriptive Statistic

This study consisted of 46 participants. With respect to gender, 14 (30.4%) were male and 32 (69.5%) were female. Of the 46 participants, 23 were Myanmar and 23 were Thailand. According to the survey questionnaires for personality traits, a frequency of 28% is observed for "conscientiousness" and 17% are "openness to experience" that are demonstrated in Figure: 1 which is based on the difference countries.



Figure 1: Personality traits distribution

The response variables include personality measures of Honesty-Humility, Emotionality, Extraversion, Agreeableness, Conscientiousness and Openness to Experience. The explanatory variables that are selected from the 65-basic face type of Unicode-ISO/IEC 10646 emoji. The statistical analysis was carried out by means of the SPSS program.

Measures of association are not inferential statistical tests; instead, they are descriptive statistical measures that demonstrate the strength or degree of relationship between two or more variables. Descriptive statistics (means, standard deviations, minimum and maximum) were used to analyze the results. That is shown in the following Table: 1.

Table 1: Descriptive statistic of personality traits

HEXACO Personality Traits	Minimu m	Maximu m	Mean	Std. Deviatio n
Age	0	1	.61	.493
Gender	0	1	.70	.465
Honesty-Humility (H)	2.63	4.19	3.579 8	.35160
Emotionality (E)	2.44	4.38	3.345 0	.45787
Extraversion (X)	2.19	4.06	3.312	.39249
Agreeableness (A)	1.56	4.25	3.185 4	.52822
Conscientiousnes $s(C)$	2.56	4.69	3.626	.46616
Openness to Experience (O)	2.69	4.38	3.504 3	.44988

4.2. Correlations among Study Variables

There are many different types of correlation that reflect somewhat different aspects of a monotone association and interpreted differently in statistical analysis. In this analysis, Pearson correlation was used to specify the relationships between the personality traits and emoji that are shown in Table: 2 which are shown in Appendix. Pearson correlation analysis has conducted based on the following hypothesis, at 5% significant level,

H₀ : Non-Existence of significant relationship between personality trait and emoji

H₁: Existence of significant relationship between personality trait and emoji

In this analysis, we got the dataset from the survey questionnaires of HEXACO personality traits result and emoji survey questionnaires. According to the results of HEXACO personality trait analysis, the average values of six personality traits measurement results are received. Based on the results, we selected the highest value of HEXACO personality trait and that are given for response variables of each participants. Moreover, explanatory variables are considered from the result of survey questionnaires for 65 basic face type of emoji. Honouring the result of questionnaires, we analyze the relation between HEXACO personality trait and emoji usage in online communication. The following section explains about the relation of emoji usage and personality traits based on gender and countries.

As per the Pearson correlation results, a correlation expresses the strength of linkage or cooccurrence between to variables in a single value between -1 and +1. Table: 2 show the result of Pearson correlation; 34 out of 65 basic face emoji which have the highest significant relationship with HEXACO personality traits. The remaining 31 emoji are not significantly relating with HEXACO personality traits. Fifteen emojis found to be significantly correlated with the "Conscientiousness" personality traits. The group of "Conscientiousness" personality trait is mostly relation with emoji based on different countries. Because of the diverse cultural groups of the two different countries, which personality traits are mostly relevant to the "Conscientiousness". The significant sets of emoji are present in Table: 3 and the internal consistency and correlation with corresponding traits are reported. Pearson correlation of emoji-based measure was good (0.729) in "Conscientiousness" personality trait.

Table: 3 Correlation analysis with selected emoji

Trait	Highly Significant Emoji	Correlation with HEXACO Personality Traits
Honesty- Humility		0.49
Emotionality		0.297
Extraversion		0.565
Agreeableness	3 2 2 3 3 4 3 4 3 4 3 4 3 4 3 4 3 4 5 3 4 5 4 5	0.614
Conscientious ness		0.729



4.3. Country based emoji analysis

This study to examine the HEXACO traits in relation to cross-cultural adjustment or cultural intelligence in two different countries, based on the usage of emoji data in online communication. The same traits have found in every culture, intercultural comparisons and correlations are possible. Although the usage of emoji and the selected group of emoji set are diverse within the analysis of the relationship between personality traits and emoji. For the purpose of this study Pearson correlation analysis has conducted at 5% level of significance under the following hypothesis;

 H_0 : Non-Existence of significant relationship between countries based personality traits with the emojis.

 H_1 : Existence of significant relationship between countries based personality traits with the emojis.

4.3.1. Thailand

The results reported in Table: 4 demonstrate the significant relation of HEXACO model and selected emoji set for Thailand. "Honesty-Humility" and "Conscientiousness" personality traits are consequently relevant with 6 emoji. (Bruck and Allen, 2003) explained that conscientious people can be good at planning, organizing and have good time management. In the attribute of "Conscientiousness," personality trait has (diligence, organization, perfectionism and prude)

that are relevant to emoji usage. \bigcirc "Pensive face" is one of the reliable significant correlation (-.731, p<0.05) for "Conscientiousness" personality trait.

:	$\mathbf{:}$	\geq	<u></u>	\bigcirc	(:)	Η	888**	797*	.761*	719*	.781*	.714*
				::		Е	731*	770*				
				(:)	:	X	943**	.772*				
					3	Α	755*	717*				
$\mathbf{\Theta}$	a	58	25	3	:	С	.790*	.835**	843**	761*	731*	792*
			$\overline{\mathbf{i}}$	(S)	(0	919**	765*	.745*			

Table 4: Emoji based personality scores for Thailand

4.3.2. Myanmar

Table 5: Emoji based personality scores for Myanmar

Н	Е	Χ	Α	С	0
- -	(:)		-	-	0
.737*	.832**		.639*	.782**	.638*
	U		<u>(1)</u>	· ·	-
	.665*		.768**	.684*	.654*
	3		•	6	3
	.703*		.813**	.759*	.672*
	1			())	(
	.699*		.659*	.794**	.711*
	(:)		<u>.</u>	<u>.</u>	<u></u>
	.720*		.679*	.817**	.810**
	6			<u>.</u>	2
	.834**			.950**	.681*
	6			<u>.</u>	
	.808**			.681*	

Pearson correlation analysis for Myanmar people that express in Table: 5. As per the findings in this study indicate that three aspects of personality traits are related with emoji usage in online communication. The variable with the highest effect was "Conscientiousness" followed by "Emotionality" personality. 7 emoji of explanatory variables have significant effects on the "Emotionality" personality trait. That indicate these 7 emoji (face with a tear of joy, grinning face, etc...) were able to explain the "Emotionality" personality traits.

4.4. Demographics Data Analysis

Regarding demographics variables, studies on the relation between personality traits and emoji found age and gender differences. A sample size of the study is 46 (32 female and 14 male), in the age group, that are separated into two groups (under 30, 30 and above).

Demographic analysis conducted at the 5% level of significance, in order to examine the following hypothesis,

 $H_{0}:\ensuremath{\text{Nonexistence}}$ of significant relationship between gender based personality traits and the emojis.

 H_1 : Existence of significant relationship between gender based personality traits and the emojis.

 H_0 : Nonexistence of significant relationship between age based personality traits and the emojis.

 H_1 : Existence of significant relationship between age based personality traits and the emojis.

4.4.1. Gender correlation with personality traits and emoji

Regarding correlations between HEXCO personality traits and emoji in (Table: 6 and 7), "Conscientiousness" and "Openness to Experience" are a highly significant relation with emoji. Gender differences in personality traits have often characterized in terms of which female gender has a higher relation on emoji in online communication. According to this analysis, female is often found to be more agreeable than male gender in the relation of emoji. The goal of investigating gender difference in personality and emoji usage, it can be seen that lower association with "Honesty-Humility and Extraversion" personality traits. Moreover, it is also noted that male gender to show their personality trait in "Conscientiousness and Openness to Experience" via online communication. Mostly they

used \bigcirc face savoring delicious food, \bigotimes tired face (-.682, -.681; p<0.01) in "Conscientiousness".

					\odot	Н	.546					
			×		$\overline{\mathbf{C}}$	Е	.556	.768	.743			
				1×	2.	Χ	599	.539				
			58	-11	3	Α	580	560	727			
e	(:)	X			\odot	С	544	549	617	681	535	682
		(N)	:	×,	<u></u>	0	623	582	644	.575		

Table 6: Emoji based personality scores for Male

Table 7: Emoji based personality scores for Female

					S S	¥	2	Н	385	429	527					
								Е	444	481						
					:	1	3	X	.409	.379	.441					
	x	25	:	\sim	(3	:)	Α	.397	.385	482	455	549	515	359	
~	22		•••	$\overline{\mathbf{\cdot}}$	00	1	-	С	357	.369	366	497	529	413	379	526
						•	22 C	0	369	.457						

Female personality traits are higher than male on some facets of Conscientiousness, such as order, dutifulness, and self-discipline. These differences are not consistent across cultures, and no significant gender difference has typically been found in Conscientiousness based on emoji usage. Mostly female gender shows their personality in online communication by using emoji. Because of this analysis, female personality traits can easily estimate by utilization of emoji.

5. Conclusion

The objective of this study is to investigate the relationship between HEXACO personality traits and emoji in online communication that emoji could provide information related to personality differences. In order to achieve this objective, it has examined the functioning of a large set of emoji based items and has evaluated the association between participants' responses and personality traits. As per the results are drawn through the country base analysis on the personal traits and emoji that have shown the significant and strong relationship between the HEXACO personality traits. Therefore as an overall analysis, it can conclude that there is a strong relationship between personality traits and emoji when it comes to country base analysis. According to this analysis, female is often found to be more agreeable than male gender in the relation of emoji. The difference between male and female frequency of emoji use was statistically significant to express their personality traits. The majority of emoji use by females lies in the category of "Emotionality, Conscientious and Openness to experience" personality trait.

References

[1]Barbieri, F., Kruszewski, G., Ronzano, F., & Saggion, H. (2016). How cosmopolitan are emojis?: Exploring emojis usage and meaning over different languages with distributional semantics. In *Proceedings of the 2016 ACM on Multimedia Conference* (pp. 531-535). New York, NY: ACM. [2]Chen, Z., Lu, X., Shen, S., Ai, W., Liu, X., & Mei, Q. (2017). Through a gender lens: An empirical study of emoji usage over large-scale Android users. Retrieved from http://arxiv.org/abs/1705.05546

[3] Cohen, J. (1988) Statistical Power Analysis for the Behavioral Sciences, 2nd ed. Hillsdale, NJ: Erlbaum.

[4]Derks, D., Bos, A. E. R., & Grumbkow, J. von. (2007). Emoticons and social interaction on the Internet: The importance of social context. *Computers in Human Behavior*, 23, 842–849. doi:10.1016/j.chb.2004.11.013
[5] Derks, D., Bos, A. E. R., & von Grumbkow, J. (2008). Emoticons in computer-mediated communication: Social motives and social context. *CyberPsychology & Behavior*, 11, 99–101.

[6] Glikson, E., Cheshin, A., & van Kleef, G. A. (2017). The dark side of a smiley: Effects of smiling emoticons on virtual first impressions. Social Psychological and Personality Science, 1–12. doi:10.1177/1948550617720269

[7] Jaeger, S. R., Lee, S. M., Kim, K.-O., Chheang, S. L., Jin, D., & Ares, G. (2017). Measurement of product emotions using emoji surveys: Case studies with tasted foods and beverages. Food Quality and Preference, Volume 62, December 2017, Page 46–59.

[8] Prada, M., Rodrigues, D. L., Garrido, M. V., Lopes, D., Cavalheiro, B., & Gaspar, R. (2018). Motives, frequency and attitudes toward emoji and emoticon use. Telematics and Informatics. Telematic and Informatics, volume 35, Issue 7, October 2018, Page 1925-1934

Appendix

Emoji	Unicode Name	Н	Е	X	А	С	0
	Grinning face	233	004	.107	.273	.277	062
	Grinning face with smiling eyes	062	036	.209	.196	055	141
M	Face with tears of joy	302*	192	.212	.150	071	.004
	Rolling on the floor laughing	264	297*	.251	.169	011	023
=)	Smiling face with open mouth	158	.108	.174	.123	.327*	.034
	Smiling face with open mouth & smiling eyes	088	054	.043	.047	.083	116
	Smiling face with open mouth & cold sweat	170	163	018	.201	044	222
X	Smiling face with open mouth & closed eyes	272	126	.175	.136	239	073
٩	Winking face	214	.011	.159	234	079	.026
٥	Smiling face with smiling eyes	121	.048	.150	.307*	.179	100
\odot	Face savoring delicious food	135	.014	.401**	177	158	.003
8	Smiling face with sunglasses	.168	.043	.227	225	.080	.218
•	Smiling face with heart-eyes	191	.183	.280	.031	.034	043
1	Face blowing a kiss	129	.216	.218	040	.011	.121
	Kissing face	.071	004	.205	.001	003	.031
^	Kissing face with smiling eyes	.033	.146	.102	022	.159	133
(<u>{</u> ~	Kissing face with closed eyes	.065	.263	.195	042	.231	049
6	Smiling face	021	.103	.093	087	.028	175
:)	Slightly smiling face	.140	007	.006	178	.126	.068
O)	Hugging face	090	177	.324*	099	.018	093
	Thinking face	.032	231	.069	391**	199	.186
:	Neutral face	.026	078	049	157	292*	119
1	Expressionless face	.014	013	.057	139	069	069
•••	Face without mouth	.171	111	078	.007	216	132
•••	Face with rolling eyes	.055	116	005	131	360*	242
63	Smirking face	156	.005	.261	269	244	.339*
×	Persevering face	025	068	010	037	241	116
	Disappointed but relieved face	129	085	126	.050	350*	188

Table 2. Correlation Analysis

•	Face with open mouth	075	228	105	261	321*	.030
	Zipper-mouth face	.105	145	197	196	213	.124
$\overline{\mathbf{\cdot}}$	Hushed face	.028	222	270	139	466**	127
3	Sleepy face	104	.067	.106	095	355*	066
	Tired face	186	.090	.040	267	380**	033
	Sleeping face	057	011	261	.096	012	208
3	Relieved face	030	.144	.143	.146	.141	.122
;;	Face with stuck-out tongue	102	.084	.305*	.016	111	.064
	Face with stuck-out tongue	315*	157	.395**	068	086	.036
	& winking eye	- 348*	- 077	381**	079	- 101	114
	& closed eyes	.540	.077	.501	.075	.101	
	Drooling face	149	219	163	.068	256	200
	Unamused face	049	037	.074	123	402**	014
	Face with cold sweat	031	130	102	062	388**	128
	Pensive face	130	.206	005	018	008	109
~		.065	.038	154	127	171	006
$\overline{\mathbf{i}}$	Upside-down face	081	140	.158	117	102	.377**
S S	Money-mouth face	476**	173	.102	.222	116	071
	Astonished face	008	035	082	145	421**	.012
~	Frowning face	.072	015	126	357*	272	.206
	Slightly frowning face	.052	094	155	195	269	.131
X	Confounded face	.046	.075	022	162	415**	.082
~	Disappointed face	.000	077	207	.014	466**	077
	Worried face	.206	.101	185	384**	230	123
	Face with steam from nose	100	104	.138	404**	395**	.059
	Crying face	058	.045	076	.026	350*	025
(19)	Loudly crying face	264	.207	017	.004	081	021
	Frowning face with open mouth	007	148	058	064	267	.036
	Anguished face	.028	154	133	.033	206	.070
	Fearful face	.024	.144	.011	.024	187	.028
	Weary face	112	042	.155	.021	323*	176
=	Grimacing face	130	025	.391**	112	.017	.217
	Face with open mouth &	071	.049	.022	004	243	020
	cold sweat	152	141	205	0(9	020	220
	Face screaming in fear	152	.141	.205	068	039	.239
0	Flushed face	.009	.076	.235	.015	008	.301*

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E	Dizzy face	104	.089	.153	096	246	102
v	Pouting face	.017	072	.231	486**	143	.289
x	Angry face	.071	.155	.238	307*	121	.003