RESEARCH ARTICLE

Measurement and association of sideways emotions with emotional expressivity among adolescents

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Abstract

Objective: To examine the development of a scale for measuring sideways emotions, and to examine the relationship of sideways emotions with emotional expressivity of adolescents.

Method: The two-phase cross-sectional study was conducted at the educational institutions of Sargodha and Bhalwal, Pakistan from October 2, 2017 to October 6, 2018, and comprised of 300 adolescents, aged 18-24 years. In the first phase, development of the Sideways Emotion Scale for adolescents was done, while the second phase examined the correlation of sideways emotions with positive and negative emotional expressivity. The scale was developed using Exploratory Factor Analysis which was further correlated with the Positive Expressivity Scale and Negative Expressivity Scale.

Results: Alpha reliability coefficients ranged from 0.73 to 0.79 and were >0.70 cut off. Positive sideways emotions were positively correlated with positive emotional expressivity whereas negative sideways emotions were positively correlated with negative emotional expressivity.

Conclusion: Sideways Emotion Scale was found to be a reliable and valid measure of sideways emotions.

Keywords: Sideways Emotions, Positive Sideways Emotions, Negative Sideways Emotions, Positive Expressivity, Negative Expressivity

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Introduction

Emotions add multiple colours to lives. They are expressed through words and actions or may be expressed verbally and non-verbally. The e-communication has restricted the possibilities of non-verbal communication as the use of Emojis is the only option to include non-verbal communication along with conventional content. Emojis are increasingly used in life today. Emoji is the brainchild of Shigetaka Kurita, who wanted to enable non-verbal exchange of thoughts.[1] Emoji could be an image or an ideogram that represent not just facial expressions, but also ideas and concepts, like celebration, weather, vehicles, buildings, food and drink, animals and plants, or emotions, feelings, and activities.[2] In 2015, the "Face with Tears of Joy" emoji was declared the Word of the Year, and the very first Emojicon, "a multi-day parity of all-things emoji", was a special tournament that took place in San Francisco in 2016.[3]

Despite the fact that sideways emotions is a new addition in literature, the construct has remained less studied due to the unavailability of relevant instruments to measure sideways emotions in adolescents. The current study was planned to develop a scale for measuring sideways emotions, and to correlate the use of emojis with emotional expressivity.

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Subjects and Methods

The cross-sectional study was conducted at the educational institutions situated in Sargodha and Bhalwal. The participants comprised of adolescents (n = 300) with age ranged from 18 to 24 years. The overall study was completed from October 2, 2017 to October 6, 2018. The study was completed in two phases.

Phase-I had four steps. In Step-I, six focus group discussions with adolescents and nine interviews with Subject Matter Experts (SMEs) represented the qualitative part aimed at understanding the practicing phenomenon of sideways emotions.

Step-II was based on relevant literature review to gain theoretical and empirical insights on sideways emotions used by adolescents in e-communication.

Step-III involved generating items and selection of a rating system. On the basis of steps 1 and 2, data was content-analysed and the most important sideways expression of emotions in nonverbal communication was identified. A 5-point Likert scale was developed where 1 referred to 'very inaccurate' and 5 referred to 'very correct'.

Step-IV comprised final selection of items for the Sideways Emotions Scale (SES) through a committee of three experts who reviewed all items independently.[4] Items were positively worded.[5] Redundant, misleading and double-barrelled items were excluded, while some items were rephrased to improve their expression, language and

comprehension. Finally, a scale consisting of 42 items was finalised.

Phase-II comprised administration of Sideways Emotions Scale on subjects for empirical evaluation. For the purpose, adolescents aged 18-24 years were enrolled from colleges in Bhalwal and Sargodha. The sample size was calculated in line view the criteria of Sampling Adequacy Test.[6] Purposive sampling technique was used with pre-defined age and education levels to ensure that the subjects had the ability to use sideways emotions. Uneducated adolescents and students below and above the specified age range were excluded. The researchers visited students in their respective colleges for collecting data. The research participation was anonymous and voluntary without any incentive. Permission was obtained from the institutions concerned on the basis of an authority letter from the Department of Psychology. Institutional Review Board (IRB) in the University of Lahore, Sargodha Campus, Sargodha reviewed and recommended the research on the basis of ethical guidelines of American Psychological Association.

The Sideways Emotions Scale (SES0 consisted of 34 items and 2 sub-scales; Positive Sideways Emotions (PSE), and Negative Sideways Emotions (NSE). The dimensions consisted of scales inclusive of positive and negative use of sideways emotions. The scale became primarily based on five-point Likert response categories from 0 = very inaccurate, 1 = moderate accurate, 2 = neither inaccurate nor accurate, 3 = moderate accurate, 4 = very accurate. Total scores ranged from 34 to 170. No cut-off scoring process was used, and simplest high and low scores were used.

Positive Expressivity Scale (PES)[7] comprised 10 items which included positive and negative emotional expressivity. Likert response format was used. The reaction categories ranged from 1 for 'very inaccurate' to 5 for 'extremely accurate'. Rating ranged from 10 to 50.

Negative Expressivity Scale (NES)[7] comprised 10 items which included positive and negative emotional expressivity. Likert response format was used. The reaction categories ranged from 1 for 'very inaccurate' to 5 for 'extremely accurate'. Rating ranged from 10 to 50. Both scales were reliable and their discriminant validity was also ensured.[8] Both PES and NES were standardised measures in which sufficient reliability and validity evidences, like Exploratory Factor Analysis (EFA), construct validation, and reliability examinations, were ensured. PES and NES were translated into Urdu language using Oblique Translation Technique. The item total correlation was greater than 0.30 for all items, according to the criteria of Kline.[9]

Results

Of the 680 subjects approached, 300 (44.12%) questionnaires were returned duly filled.

The alpha reliability coefficients from all scales ranged from 0.73 to 0.79, indicating satisfactory internal consistency. The values of skewness and kurtosis indicated that data was normally distributed (Table 1).

EFA was fixed for positive and negative factors and they were extracted by using principle component analysis. Initially, EFA was carried out with 42 items, and 34(81%) items were retained that were equally distributed in the two factors. Factor-I represented positive sideways emotions whereas factor-II represented negative sideways emotions. In the factor-I, the factor loading ranged from 0.32 to 0.63 and were thus found to have appropriate magnitude to retain the items in factor-I. In the factor-II, there were 17 items and the factor loading ranged from

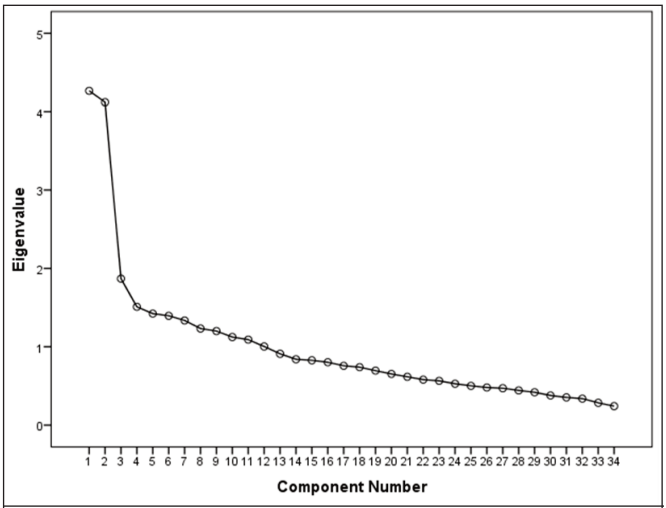

Figure: Scree-plot showing the factor structure of Sideways Emotions Scale.

Table-1: Descriptive statistics, alpha reliability coefficients and Pearson correlation among variables

Variables	Mean±SD	α	Potential Range	Actual Range	Skewness	Kurtosis	1	2	3	4	5
1. Positive sideways emotions	74.37±12.84	0.73	22-110	30-145	0.12	1.57	-	-0.14***	0.74***	0.17***	-0.24
2. Negative sideways emotions	68.74±11.14	0.77	20-100	38-100	0.13	-0.01	-	-	0.71***	-0.14***	0.21***
3. Sideways emotions	143.11±18.15	0.77	42-210	84-222	0.13	1.93	-	-	-	0.21***	0.29***
4. Positive emotional expressivity	33.13±6.99	0.79	10-50	10-70	1.25	1.04	-	-	-	-	-0.38***
5. Negative emotional expressivity	32.28±6.49	0.79	10-50	10-50	-0.47	1.59	-	-	-	-	

***p<.001.

Table-2: Factor loadings of Sideways Emotions Scale.

Items	Factor-I	Factor-II
5	0.63	0.44
6	0.63	0.55
11	0.61	0.55
17	0.58	0.33
16	0.54	0.47
12	0.52	0.65
14	0.51	0.36
18	0.51	0.51
7	0.49	0.49
4	0.47	0.50
20	0.46	-
9	0.42	0.53
3	0.41	-
15	0.39	-
13	0.38	0.40
10	0.34	0.55
8	0.32	0.52
21	-	0.50
1	-	0.38
2	-	0.34
Eigen value	4.27	4.12
Percentage variance	12.55%	12.12%
Cumulative percentage	12.55%	24.67%

Note. Factor-I: Positive sideways emotions; Factor-II: Negative sideways emotions

0.36 to 0.65 and were retained. Eigen value of factor-I was 4.27 and for factor-II it was 4.12. Criteria and factor-I explained 12.55% variance whereas factor II explained 12.12% variance. The cumulative variance explained by the model was 24.67 (Table 2). The two-factor solution obtained from EFA was appropriate and theoretically and empirically supported. The scree plot also confirmed the factor structure of SES and confirmed the factorial structure of the scale (Figure).

Discussion

The present study focussed on the development and validation of SES. Initially 62 items were generated using rational approach. At the end of the committee approach, an initial pool of 42 items was finalised for SES which was based on a 5-point Likert scale.[7] The item format of the scale was positively worded as studies suggest that negatively-phrased items lead to misinterpretation of items, mistaken response by users and miscoding by researchers, careless responding and measurement error.[8,9,10] EFA using principal component analysis resulted in a two-factor solution. Often, less than 50% of the total variance is explained by a factor solution. Both factors explained >9% variance which is considered satisfactory. Moreover, the factors were retained on the basis of Eigen values which were >1 for all factors[11] including 4.27 for Factor-I and 4.[12] for Factor-II. The EFA resulted in a 34-item model in which both factors consisted of 17 items which were loaded with varying magnitudes. The items loadings were >0.30 and therefore satisfactory according to Kline's criterion.[6] Bartlett test of Sphericity and Kaiser-Meyer-Olkin (KMO) measure of sample were used to evaluate whole factorability of the matrix.[12] Bartlett test was notable and important ($p<0.001$), explaining data properly distributed to have a potential factor structure. KMO scale of sample adequacy was used to examine the ratio of number of participants (n=300) for SES. For factorability, the value of KMO measure of sampling adequacy was 0.72 which is satisfactory. Thus, sufficient evidence existed to claim that SES was a valid instrument to measure sideways emotions among adolescents. In order to establish the internal consistency of SES and its subscales, alpha reliability coefficients were computed. For unstandardised items, alpha reliability is based on covariance among the items.[13] Alpha reliability coefficient for SES was 0.77 for negative emotions and 0.73 for positive emotions. Values of reliability coefficients indicated satisfactory internal consistency for overall scale

In order to address the concerns related to normality value of skewness and kurtosis for both the subscales and the overall SES calculated, and relevant values were ideal for symmetrical normal distribution.[14]

In terms of limitations, the present study investigated the use of sideways emotions by adolescents in their daily life e-communications. Sideways emotions are directly related to the personal emotional expressions of adolescents. Thus, the possibility of social desirability cannot be overlooked, which can be considered in future research. The chance of potential biases in responses cannot be overruled either. In future research, an additional scale for measuring social desirability should be used to screen the participants by providing socially-desirable data. The SES can be further cross-validated with confirmatory factor analysis (CFA). The cumulative variance explained by the EFA Model was <50%, which shows a poor model fit and, therefore, required further studies. However, the items and subscales in the EFA outcome model were theoretically consistent despite the limitations. Only correlations of sideways emotions and emotional expressivity were studied whereas future studies should extend it to make predictions. The potential confounder variables can be gender, duration of using e-communication and personality factors like introversion-extroversion.

Conclusion

The Sideways Emotion Scale was found to be a reliable and valid measure of sideways emotions in adolescents.

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Conflict of Interest: None.

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