

Sentence structure study of Emoji communication

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Abstract—June 22, 2015, Chevrolet sent out a press release which is completely made up of Emoji symbols. Once this press release was published, it immediately drew a massive attention of Internet users who intend to interpret it. Unfortunately, there are only a few interpretations were corresponded with the results published by the company. This study analyzed the failure of the interpretation, and improved it from an Emoji-statement perspective in accordance with rules from cognitive psychology and linguistics. Network experiment was conducted later to see if this method is effective. The results showed that by adopting specific Emoji syntactic structures and rules, subjects' expression on Emoji statement can be more accurate and the problems in signifier and referent of readers can be resolve.

Keywords—*emoji; sentence structure; semiology*

I. INTRODUCTION

The advent of the Internet era has undoubtedly popularized online social chat, during this process, some simple and interesting Emoji symbols have been integrated into the Internet world. In an online communication, Emoji symbols work better for demonstrating emotional changes in different scenarios, besides, many symbols can convey various meanings other than what they are normally appealed to be. Masahide, Yuasa argued that nonverbal graphic symbols are essentially network-assisted means of communication [1]. In addition, nonverbal graphic symbols are a form of language that rarely suffers from communication disorders [2]. In the process of cross-cultural communication, pictures or symbols can break through the language barrier in information transmission in most cases [3], thus make up for national or regional differences. Experiments confirmed that there is no cross-cultural or cross-regional identification obstacles in the use of Emoji, and can play a role in auxiliary communication in some special scenes [4]. Therefore, many young people began to use Emoji frequently instead of the text expression. Compared to the traditional way of communication, Using Emoji not only makes the Internet more graphical, but also offers a more vivid and accurate way of expressing people's thoughts and emotions.

On June 22, 2015, Chevrolet released a new car targeted at young users (<http://madbrief.com/archives/18262>). In order to

gain attentions and communicate with their customers, the promotion team choose a new way to introduce their car, which consist of a press release completely made of Emoji (fig. 1.). Once this press release was published, it quickly attracted massive attention, numerous Emoji heavy users have participated in the decoding activities and enjoying themselves.

Decode The Emojis For A Special Message.

2015-06-22

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Fig. 1. The press release completely made of Emoji

But the results of user's interpretation were found unsatisfactory. The official version of interpretation (shown in fig. 2.) showed there is only a small portion of people who have done a perfect work. The results surely lead us to think deeper on how to improve the recognition rate between the publisher and the reader.

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DETROIT — In two days at the Fillmore Theatre at 7 p.m., a new Cruze will be born and you are going to love it.

The all-new 2016 Cruze blends innovative technology, striking design and impressive efficiency into one sporty ride. It's the best new thing since sliced bread for stylish and socially connected people. A Chevrolet spokesperson said: "We had the idea that the new Cruze could change the world."

- Design: Athletic build, stylish and good looking
- Technology: 7 connected devices with available 4G LTE Wi-Fi. Cool! First in its class to offer compatibility with Apple CarPlay and Android Auto. Bluetooth compatible. Touch screen. Speakers/music.
- Seating: Seats 5
- Fuel efficiency: The 2015 Cruze offers an EPA-estimated 35 mpg hwy. The 2016 Cruze is expected to offer better fuel economy, which is awesome. Look at how much time will pass before you need to fill up your tank again!
- Safety: 10 air bags. Comes with OnStar standard for 6 months.
- Available: Soon! Coming in Spring 2016.
- Available: Globally

In conclusion, get ready to go places in your Cruze. It has the technology and fuel efficiency you need wrapped up in a fun ride. Prepare to fall in love.

Follow #ChevyGoesEmoji to learn more and join the fun!

Founded in 1911 in Detroit, **Chevrolet** is now one of the world's largest car brands, doing business in more than 115 countries and selling around 4.8 million cars and trucks a year. Chevrolet provides customers with fuel-efficient vehicles that feature engaging performance, design that makes the heart beat, passive and active safety features and easy-to-use technology, all at a value. More information on Chevrolet models can be found at <http://www.chevrolet.com>.

with the text to convey their intention. The exclusive use of Emoji in a sentence have not been widely adopted so far. The Emoji grammatical structure is not used properly in the process of interpreting and lead to inaccurate interpretation toward the statements. Therefore, the rational use of Emoji grammatical structure can greatly eliminate the problems in signifier and referent, and improve user's correct rate in their interpretation of Emoji sentence.

This study aims to run a data analysis and an improved experiment on Chevrolet's ad. By doing a data analysis, users' interpretations will be collected and processed, each interpreted statement will be given a score based on the accuracy of interpretation, and the average score for each statement will be calculated for analyzing the grammatical structure in each statement. The improved experiment will firstly distinguish statements with relatively lower recognition and modify their grammatical structure in accordance with cognitive psychology and linguistics rules. Then a further experiment will be conducted to determine whether the improved method is effective. This will eventually lead to the conclusion that certain rules are capable of improving the recognition results on Emoji statements.

II. METHODS

Chevrolet's Emoji ad introduce its new Cruze in 8 aspects including appearance, technology, fuel consumption, security, etc. We collected the interpretations from the Internet and studied how they were interpreted.

First, we split the press release into statements and have them numbered.

We then use the typical five-level Likert-type scale (from strongly disagree to strongly agree) to measure how the statements were interpreted.

From strongly disagree to strongly agree, we rated them in a score range from 1 to 5 and calculated the average score for each statement.

A. Data collection














We search for interpretations of the Chevrolet Emoji ad on the Internet and analyzed all the information gathered.

B. Data analysis

The average score for each statement is shown in Table I below.

TABLE I. THE AVERAGE SCORE FOR EACH STATEMENT

Num	Emoji Statement.	Average Score
A01		4.55
A02		4.1
A03		4.1
A04		3.5
A05		3.7

A06		2.5
A07		2.55
A08		2.7
A09		2.6
A10		3.55
A11		3.75
A12		4.4
A13		4.55
A14		3.5
A15		4.6
A16		4.55
A17		4.1
A18		5

C. Discussion

The above results showed there is a big difference among the average score for each statement. Statement A18 reached the highest score, which is 5, meaning that it can be interpreted correctly by all the users. Statement A06 reached the lowest score of 2.5, which means only half of the users did the right interpretation. It can be concluded that statements with clear grammatical structure achieved higher score than those without.



III. EXPERIMENT



According to previous findings, we modified statements with relative lower score (A06, A07, A08, A09) on their grammatical structure and formed into new Emoji statements. Then a modified experiment was launched on the Internet and new interpretations were collected.

A. Subjects

Users from Weibo, WeChat, Q-zone, Twitter, etc.

B. experimental design

1) Use verbic graphic symbols when expressing a person's behavior or thought. For example, in statement A06, we can use  (. . .) to indicate "Think / Believe"; or  (. . .) to indicate "Talk".

2) Try to use symbols which are cognitive and normative.
In statement A08,  can be used for “Bluetooth” and  is for “Wi-Fi”.

3) Use direct numbers instead of simply accumulation of symbols when trying to show the quantity of something. For example, in statement A09, it's better to use 🚗*5 for "Five seats" and 📱*7 for "Seven cellphones".





4) Use relational graphic symbols to indicate the relationship between several things. In statement A08,

$\{\text{🍏} \& \text{🤖}\}$ can be used to indicate “Compatible with Apple CarPlay system and Android system, and in statement A07, we use $\{\text{⚽} \text{🎵} \text{🏀} \& \text{👗} \text{👠} \text{👔}\}$ to say “The combination of sports and fashion”.

C. Statistical analysis

Based on the grammatical structures mentioned above, we modified statements A06, A07, A08, A09. Result of the modified experiment is shown in Table II.

TABLE II. THE AVERAGE SCORE FOR MODIFIED STATEMENTS

Number	Modified Statements	Average Score
N06		4.3
N07		4.2
N08		4.25
N09		4.4

D. discussion

The result has shown that the modified Emoji statements N09 reached the highest score of 4.4, Statement N07 reached the lowest score of 4.2. the modified Emoji statements N06, N07, N08, N09 reached a higher average score on their interpretation than their counterparts.

IV. USING THE TEMPLATE ANALYSES AND RESULTS

Compare the results with the previous data, as shown in table III.

TABLE III. AVERAGE SCORE OF 06、07、08、09

Number	06	07	08	09
Before	2.5	2.55	2.7	2.6
After	4.3	4.2	4.25	4.4

Use EXCEL software to process the data of two sets, and the test of data was carried out by T-test of the two-sample mean of the heteroscedasticity. The significant degree of $\alpha=0.05$. The analysis results are shown in table IV.

TABLE IV. THE ANALYSIS RESULTS BY T-TEST

Analysis	Before	After
Average	2.5875	4.2875
Variance	0.007292	0.007292
Observation value	4	4
Assumed mean difference		0
df		6
t Stat		-28.1547
P(T<=t)		1.33E-07
T double tail critical		2.446912

The results showed that $P=1.33E-07$. By looking up the table, we think they are significant differences if $P<0.05$.

Therefore, there are significant differences between the two sets of data, and the experimental improvement method is effective.

V. DISCUSSION AND CONCLUSION

This study showed that the improved Emoji statements are able to be correctly interpreted by users. The average score on interpretation was significantly higher after our modification. By using Emoji grammatical rules properly, users are able to convey a more accurate expression with Emoji statements and narrow both the signifier and referent gap in transmission.

Owing to the limitation of space, the above experiment only made a few simple emoji rules. Readers are welcome to conduct a more complete research combined the ideas provided in this article.

VI. ACKNOWLEDGMENTS

This research was sponsored by the National Natural Science Foundation of China (61662084) and Science Research Foundation of Yunnan Provincial Department of Education (2017YJS008) commissioned by China's Ministry of Education.

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