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A Linguistic Analysis on Negation and Emotion Shift

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Abstract

Emotion classification is gaining more attention in the field of linguistics, to facilitate the development of automatic emotion analysis and classification. While many focus on how emotions can be better classified, there are also other linguistic devices that contribute to emotions, for example negation. This paper sees negation as an important linguistic device that causes shifts of emotions and highlights the importance of taking negation into account during the automatic emotion analysis process. The paper takes data from the Chinese online social media platform *Sina Weibo* as the corpus, then observes the interaction between the two major negators *bu* and *mei* and their modifying emotion expression. The finding reveals that negators have a significant contribution to emotion shifts in social media discourse, and that the type of emotion shifts varies due to different morphological features, semantic differences or pragmatic uses such as irony.

1 Introduction

In today's digital age, social media platforms have become a significant medium for individuals to share their views and express their opinions, where personal emotions intertwine with public discourse. As vast amounts of information are delivered in a short time, automatic emotion classification has become crucial for obtaining and understanding mass emotion-related information in an immediate and accurate manner.

While automatic emotion analysis typically focuses on capturing overt expressions of emotion, at the discourse level, there are other linguistic devices that contribute to the emotional context of

text and shall not be overlooked. One such device is negation, which is the focus of the present paper.

Negation is commonly used as a negative operator that denotes the opposition of the truth value to the corresponding affirmative proposition. Studies also indicate that negation plays diverse roles within various semantic and pragmatic contexts (e.g. Horn and Kato, 2000; Fraenkel and Schul, 2008; Aina et. al., 2019). Consider the examples denoted as (1) and (2) below, they are sentences that contain negation markers that negate emotion expressions.

- (1). "My teacher is **not mad** at my performance in class."
- (2). "My teacher is **not happy** with my performance in class."

In (1), the negation marker "not" negates the emotion "mad", meaning a neutral emotion. In (2), the negated emotion expression "not happy" does not bring a neutral emotion, but a sense of dissatisfaction and anger. This is an illustration of the different possibilities of interaction that can be found when a negation marker is added to modify an emotion expression. In the present paper, we will focus on these interactions between negation and emotion in Chinese.

Seeing the significant contribution of negators to emotion interpretation, the paper aims to investigate the effect of emotion shift of negation in emotion expressions, particularly within the context of Modern Chinese social discourse. By shedding light on this linguistic phenomenon, the research hopes to offer insights for the future development of automatic emotion classification tools and emotion analysis technology.

In this paper, we would like to answer one research question: what kind of emotion shift does negation bring to emotion expressions in Modern Chinese online discourse?

To find an answer to this question, the study will investigate the interaction between negation and emotion shifts in social media discourse, by looking for negated emotion expressions in user entries on a social media platform, and then observe trends of emotion shifts after negation.

The present paper is organised into six main sections. In Section 2, we conduct a literature review on emotion classification and other relevant studies. Section 3 provides explanations for the methodology used in the present study, including data collection from *Sina Weibo* and the annotation processes employed. Section 4 presents descriptive statistics of the results for a quantitative overview of the actual number of instances of post-negation emotion shift. Followed by Section 5, where we discuss the implications of the interaction between negation and emotion. Section 6 wraps up the paper by concluding the findings of the research question and suggests avenues for future studies.

2 Literature Review

2.1 Emotion Classification

Emotion is a complex psychological state that has long been a hot topic for research. In the field of psychology, some scholars suggested that positive and negative emotions like happiness and sadness can be considered polar opposites (Watson & Tellegen, 1985; Russell & Carroll, 1999; TenHouten, 2022), while some argued that according to the Evaluative Space Model of the affected system, positive and negative emotions shall not be conceptualised as opposites (Cacioppo, 2011; Heubeck et al., 2016). In computational studies, Zheng et al. (2020) used eye-tracking cues to conduct emotion classification, taking the Circumplex Model of Emotions (Russell, 1980) as a model for classification. In text data classification, Wen and Wan (2014) applied class sequential rules to classify emotion in microblog texts, and classified emotion in seven classes, including surprise, happiness, sadness, like, anger, disgust and fear.

In linguistics studies, scholars suggested that positive and negative emotions are not opposites (Cruse, 1976; Cruse, 1986; Zautra et al., 1997). Recent studies also analysed the effectiveness of metaphorical linguistic patterns in conveying emotions (see Xiao & Su, 2014; Chan, 2024). In emotion analysis, researchers suggest the importance of classifying opinions into fine-

grained emotions such as happiness and sadness (see Wiebe et al. 2005; Mihalcea and Liu 2006), or happiness, sadness, fear, anger and surprise (Lee et al., 2010). Semantically, research has suggested that emotion words evolve over time (Xu, Stellar & Yang, 2021). Wodarz and Harris (2022) investigated on contemporary posts and concluded that temporal change in emotional characteristics in texts is present. Liu and Liu (2022) researched on the changes of emotion by analysing emotion words used on social networks, suggesting positive and negative emotions should be “independent dimensions”.

2.2 Emotion Reversal

The idea of reversal were suggested by Apter (1989) as the Reversal Theory, which focuses on the dynamics among elements including personality, motivation and emotion, and suggests that reversal is a switch between systems that are simultaneous with emotions that might be experienced when an individual is in a new motivational state, while the levels of emotions are “assumed to be toward opposite ends”. Throughout the years, the concept of reversal has been applied into different linguistics concepts, including: (1) polarity (Fauconnier, 1975; Isreal, 2006; Reinhart, 1976), where Reinhart (1976) has suggested that negative polarity could lead to reversed judgements; and (2) morphology (Baerman, 2007; Steriopo, 2021), where Baerman (2007) has mentioned the pattern of reversal in gender marking in Hebrew, and reversal in voicing in Luo (Okoth-Okombo, 1982).

2.3 Negation and Emotion

Negation in emotion words can cause shifts in emotion. The importance of studies on negation on sentiment analysis has been highlighted throughout the years (Hogenboom et al., 2011; Carrillo-De-Albornoz and Plaza, 2013; Cruz et al., 2015, Makkar, 2024), particularly on sentiment reversal (Herbert et al., 2011; Weis and Herbert, 2017; Ilmawan, 2024). Kennedy and Inkpen (2006) examined the effect of changes in the polarity of sentiments caused by negation, intensifiers and diminishers as valence shifters, whereas negations were used to achieve reversal on semantic polarity. Ljajić & Marovac (2019) has highlighted the necessity of addressing negation rules to enhance sentiment classification accuracy. Various studies

have shown that negation in sentiment analysis does not necessarily lead to reversed polarity (Wiegard et al., 2010; Farooq et al., 2017; Singh and Singh, 2019, Gupta and Joshi., 2021).

Jia et al.(2009) mentioned the complexity of determining polarities of sentiments in negation terms in English text analysis, while He et al. (2017) suggested that negation detection for Chinese texts could be relatively more challenging in concern of challenge in segmentation and presence of homographs. In English, Taboada et al. (2011) used a -5 to +5 scale when working on the extraction of sentiment from text, including negation and intensification. In Korean, Rhee et. al. (2012) examined the change in polarity on negated emotion words by measuring the valence and arousal dimensions, using a -3 to +3 scale. In Chinese, previous research has investigated on negated emotions by startle reflex modulation, suggesting negation could be a “spontaneous down-regulation” of negative emotions (Herbert et. al, 2011). In the study by Chevi and Aji (2024), it is suggested that negated primary emotion changes the original emotion by simulating the opposite of the original emotion.

3 Methodology

3.1 Data Collection

For corpus extraction, we automatically extracted social media posts from *Sina Weibo* and randomly selected part of it as the corpus for the study. Sina Weibo is chosen as it is one of the most popular Chinese social media platform, so the lexicon contains an extensive range of natural expression in Modern Chinese used in daily context. The corpus comprises a total of 1,311,874 text entries in Simplified Chinese, from one hundred anonymized authors.

For the selection criteria of negators, we follow the negation criteria outlined by Xiao and McEnery (2008), where they proposed that *bu* and *mei* are the major, and most important negators in Chinese. For the selection criteria for emotion words, the Chinese Emotion Taxonomy proposed by Lee (2019) were used as the foundation for the list of emotion words, where Chinese emotion expressions were divided into five primary emotions, then branched out into variations in intensity, and also first- and second-order emotions that are believed to have involved more than one primary emotion. Aligned with the aforementioned

scholarly framework, a total of 468 expressions, which include all emotion words in the Chinese Emotion Taxonomy by Lee (2019) that immediately followed the two negators *bu* and *mei*, were selected as the final candidate list.

3.2 Data Annotation

The data annotation is conducted by a native Chinese speaker. The annotations primarily focused on identified negated emotion words,

Entry	不开心 今天排球我没过 [泪]	随你叫骂, 我不生气
Emotion	happiness_moderate	anger_moderate
Reversed emotion	sadness_moderate	neutral
Note	/	/
Reviewer 1	1	1
Reviewer 2	1	1
Reviewer 3	1	1
Reviewer 4	0	1
Reviewer 5	1	1

Figure 1: Example of annotation

applying Lee's (2019) emotion taxonomy framework to evaluate the effect of emotion shift caused by negation in the text. The annotation starts with looking for an emotion expression, then the original emotion would be annotated according to the taxonomy framework. After that, if the entry contains emotion expression that is modified by the negation markers *bu* (不/ NEG), *mei* (没/ NEG), or *meiyou* (没有/ NEG), the emotion of the negated emotion expression is annotated according to the taxonomy. If there is no shift in emotion, the same emotion as annotated at the original annotation will be marked.

Following the primary annotation, five volunteers between the ages of 20 and 35, possessing native Chinese proficiency, were recruited as reviewers. They were asked to review the annotations and indicate whether they agreed or disagreed with the primary annotations. If they agreed with the annotation, the letter “1” would be marked for indication, and “0” would be marked for disagreement. Only entries with three or more agreements were included in the final selection.

This age group was chosen due to statistics indicating that over 70% of Weibo users fall within this demographic, making them the primary audience of the social media platform (Lai, 2024). Two examples of annotated instances are given in Figure 1.

4 Results

After annotation and review, the total number of selected entries is 485. Table 1 presents the number of instances of emotion shifts in general.

Among the 485 selected entries, 94.6% (459 entries) exhibited varying degrees of emotion shifts, while 5.4% (26) negated emotion expressions showed no shift in emotion. In terms of choice of negation marker, there are 476 entries which contain emotion expressions negated by the negation marker *bu*, of which 94.7% showed an

	Percentage with Emotion Shift	Percentage without Emotion Shift
All Entry (485)	94.6% (459)	5.4% (26)
Negated by <i>bu</i> (476)	94.7% (451)	5.3% (25)
Negated by <i>mei</i> / <i>meiyou</i> (9)	89% (8)	11% (1)
Double Negation (9)	11% (1)	89% (8)
Ironic Expression (2)	0% (0)	100% (2)
Rhetorical Questions (25)	52% (13)	48% (12)

Table 1: Number of Instances of Emotion Shifts

Primary Emotion	Percentage of Instance as Original Emotion (485)	Percentage of Instance as Shifted Emotion (459)
Happiness	42.5% (206)	12.2% (56)
Sadness	16.1% (78)	32.5% (149)
Fear	19.4% (94)	6.3% (29)
Anger	20.6% (100)	3.7% (17)
Surprise	1.4% (7)	0% (0)
Neutral	N/A	45.3% (208)

Table 2: Distribution of Emotion Shifts

emotion shift after negation. Nine entries are negated by the negation markers *mei* and *meiyou*, where 89% (8) of the entries experienced a post-negation emotion shift, and 11% (1) did not. The majority of negations are marked by the negation marker *bu*, showing that *bu* is the most common

negator for emotion expressions. In terms of context, there are 9 instances of double negations and 2 ironic expressions. Most of them did not demonstrate an emotion shift after negation. Among the 25 rhetorical questions in our corpus, around half of them (52%) displayed an emotion shift, while 48% (12) did not.

Table 2 illustrates the distribution of emotion shifts among the five primary emotions. Out of 485 instances, 42.5% (206) have the original emotion as happiness, meaning that emotion expressions in happiness are often used in daily context; sadness, fear and anger emotions have around 20% instances as the original emotion respectively, with sadness taking up 16.1% (78), fear taking up 19.4% (94), and anger taking up 20.6% (100). The least used emotion expression is surprise, which takes up only 1.4% (7) of all entries in the corpus. For shifted emotion, neutral take up the highest percentage of 45.3%, sadness 32.5%, happiness 12.2%, fear 6.3% and anger 3.7%. There is no emotion shift in surprise. The results also suggested that the emotion shift after negation is different among the 23 emotion categories.

5 Discussion

The results suggested that negation leads to emotion shifts in most of the cases, which proves the importance of considering the interaction of negation marker and emotion expression when conducting automatic emotion analysis. Different emotion expressions showed emotion shifts in different patterns, which can be explained by their morphological, semantic, and pragmatic differences such as ironic expressions.

5.1 Prevalence of Emotion Shift after Negation

After the annotation and review process, we generated a graph to observe the trend of emotion shift after negation (see Figure 2).

Figure 2 shows the cases of emotion shift in this research. The blue crosses indicate the original emotions of the emotion expression before negation, while the red squares on the other end of the connecting black line indicate their corresponding emotions after negation. The y-axis marks the intensity of the emotions, from low, moderate, high, to complex. The x-axis marks the primary emotions of the entries, which include anger, sadness, fear, neutral, happiness and surprise.

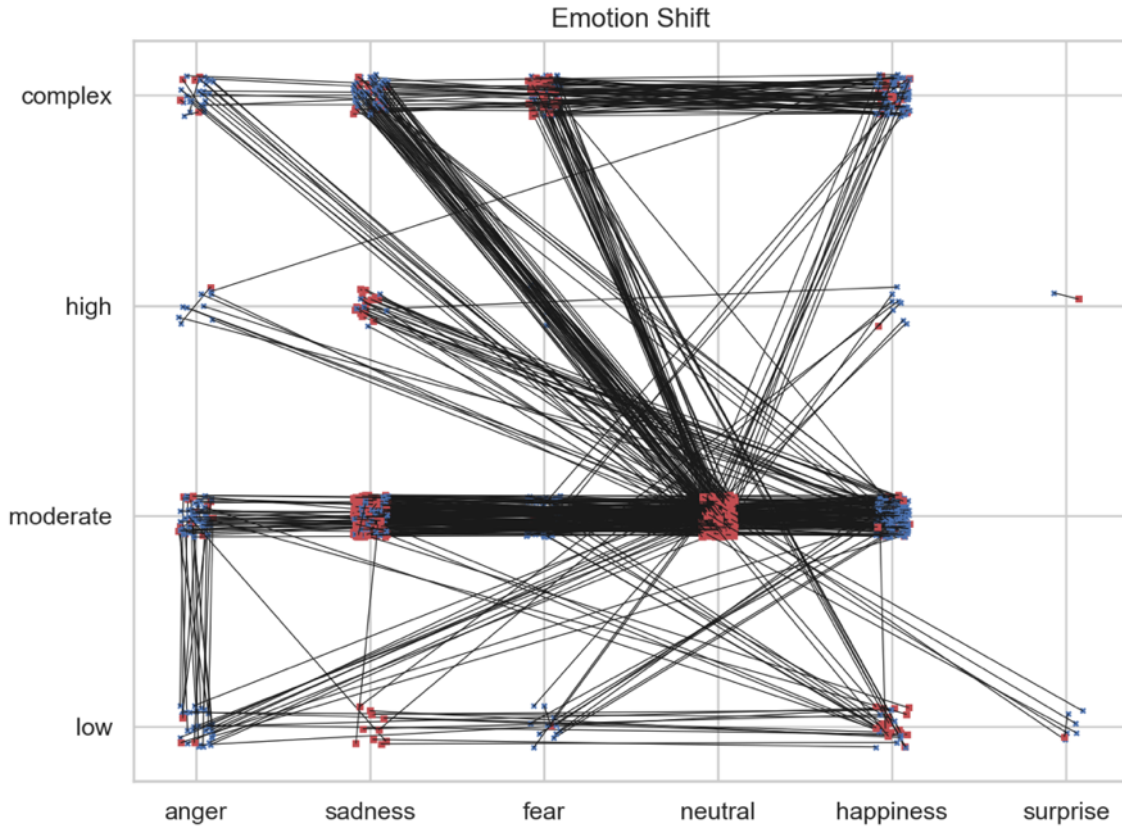


Figure 2: General trend of emotion shift after negation

The graph in Figure 2 exhibits a profusion of connected lines across emotions and degrees of intensity, which suggests the prevalence of emotion shift in negations of Chinese emotion expressions. As suggested in Table 1, 94.6% of the negated emotion expressions experienced a shift of emotion, which supports that the majority of the use of emotion words with negation markers involves an emotion shift, meaning that taking negation markers into account when conducting emotion classification is essential for accurate automatic emotion detection.

5.2 Emotion Shifts to Neutral

As shown in the graph in Figure 2, a concentration of red squares can be found in the column for “neutral” emotion, which reflects that negation enables an emotion shift from one to neutral in many cases. Statistically, out of the 459 emotion shifts, 208 of them are shifted to neutral, which takes up to over 45% of the total instances of emotion shifts.

In terms of the degree of emotion shift, emotion expressions, after being negated, are not necessarily reversed to their extreme opposites. More often, the negation leads to a shift from its primary emotion to a neutral emotion, which

suggests that it is more likely that the process of negation in Chinese emotion expressions results in a “cancellation” in the emotion, or in other words, a less strong emotional state.

- (3). 我几乎从来**不**生气，因为我认为没必要
 1SG almost always **NEG** angry, because
 1SG think **NEG** necessary
 ‘I almost **never** get **angry**, because I think
 it’s not necessary.’

The extracted example (3) is a demonstration of the negation marker ‘不’ causing an emotion shift of the moderate-intensity anger expression *shengqi* change to a neutral emotion. Here, ‘不’ (*bu*/ **NEG**) denotes the falsity of the author getting angry always, but does not suggest any other primary emotion besides not feeling angry, which means the emotion of “anger” is cancelled.

- (4). 谢谢你给我打气让我**不**紧张
 Thanks 2SG give 1SG cheer make 1SG
NEG nervous
 ‘Thank you for cheering me up so that I am
not nervous.’

This is an example of the negation marker ‘不’ (*bu*/ NEG) causing a shift of emotion from the complex fear plus sadness emotion expression, 紧张 (*jinzhang*/ nervous), to a neutral emotion. In the example, ‘不’ (*bu*/ NEG) is the negator that modifies the adjective 紧张 (*jinzhang*/ nervous) by denying the feeling of nervousness. There are no other cues in context that could suggest the author was experiencing other primary emotions when saying the phrase 不紧张 (*bu jinzhang*/ not nervous). The emotion “nervous” is cancelled, resulting in a neutral emotional state.

(5). 莫言 称获奖不兴奋想尽快投入写作

3SG say win award NEG excited want soon devote in writing

‘3SG said he was **not excited** about winning the award and wanted to get back to writing as soon as possible.’

In the above example, the negation marker ‘不’ (*bu*/ NEG) has caused a shift of emotion. The emotion expression *xingfen* has a high-intensity happiness emotion, but is shifted to a neutral emotion when being negated by ‘不’ (*bu*/ NEG). Similar to the previous examples, there are no cues of other primary emotions, and the presence of a negator means the feeling of excitement is false, which means the emotion of happiness would be shifted to neutral.

The aforementioned examples have showcased how a negation marker could shift the original emotion of an emotion expression to a neutral state, which explains the concentration of red squares distributed on the column of “neutral” emotion in Figure 2. However, this only happened to around 42.8% of the total entries. For the rest of the entries, some experience varied degrees of emotion shift or experience no emotion shift due to different reasons, for example the presence of textual cue for emotion shift, irony, morphological difference, semantical difference, double negation, and interrogative construction. In the analysed data, it is noticeable that for 17 of the emotion expression categories, emotions are most shifted to neutral emotion after negation. For the few exceptional cases, the presence of negation marker shifts the emotion expression to another primary emotion. For instance, for low-intensity happiness, majority are shifted to low-intensity sadness emotion after negation; for moderate-intensity happiness, majority are shifted to moderate-intensity sadness.

These are due to the morphological feature where the common practice ties the negator to the adjective closely like a prefix in English. In other cases, they experience post-negation shifts of emotion to a different primary emotion because of their corresponding semantic usage. These cases include low-intensity fear, which are most shifted to moderate-intensity happiness (7 out of 11); happiness plus fear, which are most shifted to fear plus sadness (27 out of 48) and sadness plus fear emotions (14 out of 48); and anger plus fear, which are most shifted to happiness plus fear emotion (7 out of 14).

5.3 Morphological Difference

In Chinese, *bu* is the common negator which could denote the falsity of the modifying adjective, but at the same time could work like the negative English prefix *un-* that denotes negation and tends to connate negative emotion than neutral. For example, the adjective *buxingfen* (不兴奋) means “not excited”, where *bu* is the modifier that negates the emotion expression *xingfen*, leading to an emotion shift to neutral emotion (see example (5)); but for the adjective *bukaisin* (不开心), it means “unhappy”, where *bu* works like the English negative prefix *un-*, which is more bounded to the adjective *kaisin* (happy), leading to an emotion shift to sadness. The above discussion is not intended to imply the equivalence of the English negative prefix and the Chinese negator, rather, the emphasis lies in illustrating how the Chinese negator “*bu*” can exhibit similarity on conveying the negative sense beyond denoting falsity. In this research, the negated emotion expression *bukaisin* (不开心) has the largest number of emotion shifts to non-neutral emotions, where most of them are reversed from moderate-intensity happiness to moderate-intensity sadness. An example is:

(6). 不开心睡一觉，就让它过去吧。

NEG happy take one nap just let 3SG go SFP

‘If you feel **unhappy**, just take a nap and let it go.’

As the negation marker *bu* in *bukaisin* (不开心) is morphologically closely bounded to the adjective, it implies the “unhappy” emotion. To negate the emotion *kaisin* (happy), it is a more common practice for Chinese native speaker to say *meiyoukaisin* (没有开心), which simply negates

the modifying adjective without adding a sadness emotion to it.

5.4 Semantic Difference

Some emotion expressions experienced non-neutral emotion shift after being negated, due to their semantic meaning, for example, the word *gaoxing* (高兴), after being negated by the negation marker *bu*, can lead to different emotion shifts including anger and sadness, as it has more than one semantic meaning.

- (7). 这个点自然醒是不是有点过分了, 我老妈明显的**不高兴**了

this time naturally wake up is it not a bit over
-LE, 1SG mom obvious -DE **NEG happy**
-LE

‘Isn’t it a bit too much to wake up naturally at this time? My mother is obviously **not happy**’

- (8). 今儿收到一条信息, 我一下就不**高兴**了
[怒]

today receive NUM CL message 1SG NUM
CL just NEG happy -LE [anger emoji]
‘I received a message today and I am **not happy** all of a sudden [angry]’

- (9). 心里还是**不高兴**。改变使我难过, 不变使我悲伤。

heart still **NEG happy** changes make 1SG
unhappy, not change make me sad
‘Down deep I am still **not happy**. Change makes me unhappy, and staying the same makes me sad.’

- (10). 感冒了, **不高兴**

caught cold -LE **NEG happy**
‘I caught a cold. I am **not happy**.’

Comparing Example 7, 8, 9 & 10, in Example 7 & 8, the negated emotion expression *bugaoxing* (不高兴/ not happy) has the emotion of frustration and dissatisfaction. In Example 9 & 10, the negated emotion has the emotion of sadness. This shows that the word *bugaoxing* (不高兴/ not happy) has more than one semantic meaning, and the actual emotion conveyed shall be interpreted by taking the full context into account.

Another example is the word *ciyi* (迟疑/ hesitant), which is a low-intensity fear emotion expression. When being negated by the negation marker *bu* (不/ NEG), it means not hesitant, the

feeling of being able to make decisions immediately. The assertion of ‘迟疑’ (hesitant) means the negation of ‘松快’ (readily), vice versa. There is not a neutral middle point between the two feelings semantically, making it experience an emotion reversal to moderate-intensity happiness after negation.

Same happens to the happiness plus fear adjective. The word *bufangxin* (不放心/ not rest assured) has the same meaning as the word *danxin* (担心/ concerned), which is a fear plus sadness emotion. Again, there is no neutral middle point of emotion state between the two emotions semantically, which forms a fixed emotion reversal of the negation of *fangxin* (放心/ rest assured), from happiness plus fear to fear plus sadness.

- (11). 一直对这种餐具**不放心**。

always towards this kind tableware **NEG rest assured**

‘I have always been **concerned** about this kind of tableware.’

Another happiness fear word 自信 (*zixin*/ confident) also has a fixed emotion shift to sadness plus fear, as the assertion of *zixin* means the negation of the sadness plus fear emotion expression *zibei*, vice versa.

- (12). 我不放弃爱的勇气, 我不**怀疑**会有真心

1SG NEG give up love -DE courage, 1SG
NEG doubt will have true love

‘I don’t give up the courage to love, I **believe** that there will be true love’

In the anger plus fear emotion category, the word *huaiyi* also has a fixed emotion shift from anger plus fear to happiness fear, as not feeling doubtful means the same as trustful.

- (13). 你这么漂亮怎么都不**自信**呢?

2SG this beautiful how still **NEG confident** SFP

‘How come you are still **not confident** when you are so beautiful?’

5.5 Irony

Szenberg and Ramrattan (2014) defined irony in speech as utterance that means the opposite to its literal meaning, which is a basic interpretation of what Grice’s approach (1975) has suggested. In our dataset, there are also 2 examples of ironic

sentences that brought no change to emotion shift after the negation of emotion expression.

(14). 我让他帮我拍照, 几十张照片只有最后一张是正常的, 脸他妈还是蓝的。

[呵呵] 我, 一点也不生气。

I make him help me take photo, tens CL photo only last one CL is normal -DE, face fucking is blue -DE I, a bit YE **NEG mad**

‘I asked him to take a photo for me.....

Dozens of photos and only the last one is normal, and the face is even fucking blue.

[smiley emoji] I, am not mad at all.’

(14) is an example of irony found in our project corpus. The speaker explicitly used a simple negation ‘不’ (*bu*/ NEG) to modify the moderate-intensity anger emotion expression 生气 (*shengqi*/ mad). Under simple negation, the mitigation effect of the negator should cause an emotion reversal from moderate-intensity anger to neutral emotion. However, the author has also included in the context that he was not satisfied with the pictures, which suggests the author was actually feeling mad, despite claiming the opposite. The author is demonstrating the use of irony here, where he said the opposite of what he was actually feeling, to create an ironic contrast. To make the underlying sense of irony more explicit, the author has also made use of the smiley emoji (i.e. 😊). The use of a smiley emoji here mismatched the negative valence of the sentence, which is a technique that is commonly used to show irony and dissatisfaction (Weissman and Tanner, 2018).

5.6 Emotion Shift due to Textual Cue

The present study aims to investigate the emotion shift of negation in social media discourse, but other than negation, it is also worth noticing that the surrounding text contributes to the emotion classification at discourse level, although not the focus of the present paper.

(15). 所以对方是德国球队, 就会不恐惧了, 稳的

So opponent be German team (for ballgame), then will **NEG afraid** SFG, stable DE

‘So if the opponent is a German team, we won’t be afraid. It’s stable.’

(15) is an example of a shift of emotion from high-intensity fear to low-intensity happiness. The negation marker *bu* negates the fear emotion of the expression *kongju*, which denotes the falsity of feeling high-intensity fear. By just reading the negated expression alone, the emotion might be neutral. However, the adjective *wen* on the latter part of the text entry served as a cue that the author thinks the situation is stable, which means the author did not experience the emotion of fear, and also felt relaxed under the stable situation. This indicates the complexity of emotion at a discourse level and can be directions for future studies.

6 Conclusion

The present paper addresses the question: what kind of emotion shift does negation bring to emotion expressions in Modern Chinese online discourse?

In general, a negation marker denotes falsity to an emotion expression, which leads to an emotion shift to a neutral emotion state. There are also other possible emotion shifts that are dependent to its morphological, semantic, pragmatic features. On morphological level, unlike English where negating modifiers (such as “not”) and negating prefix (such as “un-”) are more distinct in structure, such distinction is relatively not clear in Chinese. The negating device *bu* (不/ NEG) can denote falsity of an emotion (e.g. 不生气 / not mad, see example (3)), and also contribute on constructing a negative adjective (e.g. 不开心 / unhappy, see example (6)) that leads to a corresponding, fixed post-negation emotion shift. On semantic level, diverse interpretation is possible for some emotion words, for example *bugaoxing* (不高兴/ not happy, see examples (7), (8), (9), (10)), which could imply anger or sadness depending on the surrounding context. Fixed post-negation emotion shift also applies when an emotion expression’s assertion is an implication of the negation of another emotion expression, for example the pairs: *fangxin* (rest assured) and *danxin* (worried); *zixin* (confident) and *zibei* (self-abased); *huaiyi* (suspicious) and *anxin* (relaxed). On pragmatic level, structural difference leads to different kinds of emotion shift. For instance, in ironic expressions, negators do not bring emotion shift to its original emotion. The observation in the present paper illustrates the different possibilities of shifts of emotions that negation markers can bring forth. This observation

can provide insights on automatic emotion detection development for improvements on accuracy and robustness. As the size of selected data for this research project is limited due to the overwhelming size of advertisements that shall be eliminated from conversational text analysis, extensive data and examples from different social media would be needed for a more comprehensive and robust comparison. Future research may consider using a larger corpus across different Chinese social media platforms.

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