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Brief Research Report

***Corresponding author**
Sheila Brownlow, PhD
Professor
Department of Psychology
Catawba College
Salisbury, NC 28144, USA
E-mail: sbrownlo@catawba.edu

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How Social Status Influences "Affect Language" in Tweets

Sheila Brownlow, PhD[1*]; Jennifer C Beach, BA[1]; N. Clayton Silver, PhD[2]

[1]Department of Psychology, Catawba College, Salisbury, NC 28144, USA
[2]Department of Psychology, University of Nevada, Las Vegas, NV 89154, USA

ABSTRACT

Background: We studied the "affect language" (emotional content) in over 2000 Tweets of 50 famous celebrities across a one-month period.
Method: The 140-character language bursts were analyzed with the Linguistic Inquiry and Word Count (LIWC), which provided percentage of language used to represent various emotional states.
Results: Lower-status celebrities (i.e., those with fewer followers) used more positive emotion in their Tweets compared to higher-status celebrities, although negative emotional content did not vary by celebrity status. There was no statistically significant difference between sexes on emotional content.
Conclusion: Our results suggest that social status may be more important to public use of affect language than sex of the celebrity.

KEY WORDS: Affect; Language use; Twitter; LIWC; Celebrity status.

INTRODUCTION

"I'm so overwhelmed by all this birthday love!!!! Thank you so much! It means the world to me!" Tweet from Khloe Kardashian to sister Kim, May 29, 2017.

A simple sentiment expressed from one celebrity sibling to another on Twitter speaks volumes about not only the sender's emotional state, but also the likely sex, social standing, and age of that person. Indeed, language is a reliable indicator of several social markers of its users, including status, sex, and personality.[1,2]

Different methods may be used to map the content of language to characteristics of users. Several studies by Schwartz, Kern, Park, Eichstaedt, and colleagues[3-5] have employed an open vocabulary method that involves characterization of language into several natural, spontaneous categories. This method has been productive in identifying how language used in social media predicts a user's personality and emotional state.[3,5] In contrast, a closed approach begins with pre-set dictionaries into which words are categorized. The most notable closed approach is Pennebaker's[6] Linguistic Inquiry and Word Count (LIWC), which classifies word use into different parts and different types of speech using a dictionary of 6000 words. The LIWC has been used to examine language in a broad range of contexts (e.g., natural speech, plays, poems, diaries, social media, song lyrics, political speeches, and news conferences) and has been shown to reliably identify aspects of personality, current emotional state, education, sex, focus on relationships, level of cognitive sophistication, and age of speakers and writers.

Both methods of language analysis have been successful in identifying language user personality,[7] health,[8] psychological states,[9] as well as the aforementioned user demographics. Additionally, each approach has been used to tap emotional content of speech and writing and to map that content onto qualities of the speaker. Not surprisingly, when people are sad their language may connote more negative emotional content, whereas they may use more positive

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emotional words when they are happy.[10] On the other hand, simple emotional experience does not necessarily lead to a corresponding linguistic affect.[9,11,12] Thus, actual emotional states are not the only cause of affect-laden language, which can instead be a function of speaker characteristics and purpose of language use.

Affective words are used differently depending on context[9,13] and according to sex,[1,13] age,[4,14] political affiliation,[15] and personality.[16] For example, language conveying positive affect (particularly with positive feelings; such as "I'm happy" or "that's nice") is more common in women,[4,17,18] and increases with age[14]; (although Kern et al[4] for a discussion of the importance of emotional intensity to this trend). For example, a gamut of emotions is seen in the language of Democrats compared to Republicans,[15] and positive emotion is found more often in the language of extraverted,[5] conscientious, and agreeable people,[3,4,16] but it is unlikely to be used by those with high achievement motivations.[16]

Negative emotional language also clearly reflects user characteristics. For example, either lots of negative emotion or an absence of any appropriate emotion in language are signs of poor psychological health.[12] Moody, over-reactive, and self-indulgent people (e.g., those high in neuroticism) use negative emotional words,[14,19] but negative language is less likely among persons who are high in conscientiousness.[7] In many contexts, particularly those surrounding anxiety-provoking situations, women express more negative emotion.[13] People who are unpredictable more commonly use words of anger to express themselves,[19] as domen,[18] although anger in linguistic expression is tolerated only among those of higher status.[20]

Social status differences (such as those due to rank, hierarchy, or importance) are also important to language use, particularly pronoun use.[21,22] Less, however, is known about how status as opposed to other social and demographic markers influences affect language. While Kacewicz et al's[22] study of status focused on pronoun use, those researchers also reported no statistically significant overall effect sizes for affect collapsing across five studies in a meta-analysis. Specifically, neither the high nor low status persons in their studies were consistently more likely than the other to use positive nor negative emotion,[22] regardless of whether status differences were inherent in the relationship of the persons interacting or assigned through experimental manipulations. On a study-by-study basis, however, some status-linked differences were seen, perhaps because status is concomitantly linked with sex in many social interactions. Thus, the consideration of the singular and joint influences of status and sex on use of emotional language may be important to understanding how affect is expressed in social situations.

One good place to look at natural expressions of language is on social media,[4,7] because so much daily communication takes place in social media platforms including Facebook, Snapchat, Instagram, and Twitter. Indeed, the Pew Research Center[23] reported that most adult Americans use some forms of social media *each* day. Twitter, a social media site that is open-access (i.e., every Tweet ever sent still exists and can be obtained, regardless of whether you are on Twitter) is one such site. Over 100 million people use Twitter daily, sending over 500 million Tweets.[24] Twitter forces users to be spare and succinct in their expression allowing only 140-characters per Tweet. Therefore, our study examined how short linguistic posts on Twitter showed emotional-laden language differences between sexes and social statuses of public persons. Our variables of interest were both positive and negative emotion as a function of speaker background. Specifically, we predicted that women and celebrities with a lower social status on Twitter would show more affect-laden language in their Twitter posts when compared to men celebrities and those with more followers.

METHOD

Sample

A total of 2128 Tweets from a 30-day window in the summer of 2015 were taken from the active (having tweeted within 30 days, at least once), verified Twitter accounts of 50 actors (n=25 each men and women) who were most popular in 2015 on www.ranker.com. All sample targets used Twitter in English. Because people sometimes impersonate celebrities on social media, we verified the Twitter account by either checking the blue circle on the account to look for a white checkmark (which means that the Twitter corporation verified to whom it belonged), or we went to the target person's website and located the Twitter account link. Following Beach et al,[21] we operationalized social status by the number of followers (number of people who receive one person's Tweets) taking a median split of our sample (Mdn=1,063,500 followers, SD=3,610,545). We used a median split rather than dividing the sample into thirds to avoid potentially discrepant and significantly small within cell sample sizes that could severely diminish power. Separate t-tests confirmed that the median split yielded two groups differing in the number of followers, $t(48)=4.63$, $p<0.001$, but that there were no differences in number of followers according to actor sex, $t(48)=1.76$, $p>0.05$.

Measures

Each Tweet was placed verbatim into a word document and analyzed with the LIWC software, employing the standard dictionaries installed with the program. The two measures of interest were percentage of positive emotional words (such as nice, happy) and negative emotional words (e.g., ugly, angry, worried). The LIWC approach was used because we were not comparing word use in Tweets to actual measures of personality of the persons writing the Tweets; that comparison would be more productive using an open-vocabulary approach of language analysis.

RESULTS

To determine the differences in affect among the Tweets, we computed a 2 (Sex)×2 (Social Status) between-subjects MANOVA with percentages of positive and negative emotional words

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comprising the dependent variables. The analysis showed a statistically significant multivariate effect of social status, $F(2, 2123)=12.94$, $p<0.001$, Wilks' $\lambda=0.988$, $\eta_p^2=0.012$ (observed power=0.99), but neither a statistically significant main effect of sex, $F(2, 2123)<1$, nor an interaction, $F(2, 2123)=1.66$, $p>0.05$. Separate univariate tests, with a Bonferroni correction, indicated that celebrities of lower social status ($M=7.12$, $SD=10.86$) included more positive emotion in their Tweets than did those with higher social status ($M=4.34$, $SD=7.45$), $F(1, 2124)=25.67$, $p<0.01$, $\eta_p^2=0.012$ (observed power=0.99). Means and standard deviations from the analysis of positive emotion are seen in Table 1. Overall, there was no statistically significant correlation between the percentage of positive and negative emotional words, $r=-0.036$, $p>0.05$.

DISCUSSION

Our results demonstrated that social status, as determined by Twitter followers, was the key factor in determining how much positive emotion was seen in the language of celebrity Twitter users. Lower-status (i.e., less "followed") celebrities used more positive emotion in their Tweets, regardless of sex. Surprisingly given previous research findings,[1,13] women did not use more positive emotion than men. Negative emotion in Tweets was not different according to sex and social status.

Status may be more important than sex among this target sample,[21] particularly because the ages of persons in this sample is large compared to many language studies. While not all language studies focus on only college-aged language users[14,16] many LIWC studies focused on college-aged students, who may show more sex-linked language differences. More likely, however, is that the medium—140 characters—is the key determinant in content. Perhaps lower-status celebrities sought to portray themselves as agreeable, extraverted, and open, qualities associated with positive emotion in language,[3,5,25] keeping their Tweets "light". Lower-status celebrities may have wished for positive attention, making short but upbeat points, regardless of how they were truly feeling—indeed, positive emotion in public writing does not always correspond to actual positive affect.[9] Higher-status celebrities with many followers may have Tweeted about pet causes, or felt freer to be less upbeat than lower-status celebrities because they have so many followers.

While lower-status celebrities showed more positive emotion, they did not correspondingly show less *negative* emotion. While celebrities may be characterized as self-involved and neurotic (and, thus, more likely to use negative emotion in their language),[16,19] there was very little negative content at all in the sample Tweets. While not directly comparable to those reported in other studies using different target groups, the emotional content of these Tweets is nonetheless strikingly different from baseline percentages reported in large samples,[9,10] particularly that of Newman et al,[13] which included 500,000 text files. In most samples, negative emotion is less likely than positive emotion; and while that was true of our sample as well (5.72% positive; 1.15% negative), over 5% of language being positive (and only around 1% negative) is atypical. Thus, these Twitter users may not have wished to be perceived as volatile and withdrawn and neurotic, which are traits of people who use negative emotion in their social media language.[26] Moreover, negative emotion is domain-specific (mostly about work/school[9]) and context driven,[22] suggesting that only an intense focus about a very specific topic will reveal negative emotion in short Tweets.

Our results provide insight on the use of emotional language in Tweets, but only for a relatively uncommon sample. Because we determined social status to be a function of number of followers (ranging from 25,000 to over two million), and the average number of followers people have on Twitter in 2017 was 707, and fewer than 1% of Twitter users have over 10,000 followers,[27] our sample of celebrities provides a view that may not be representative of emotional language in short language bursts of people who are not in the public eye. Our sample also included mostly American celebrities who did not vary greatly in race and ethnicity. Additionally, we did not examine the time of day of the Tweets, as people tend to become more "moody" and less happy as the day progresses.[28] Finally, our sample was gleaned in a short window of time before the United States presidential election race was in full swing, and it is thus likely that the sample neither represents celebrities from other cultures nor the more-recent social media climate in the US brought about by sharp political divides along partisan lines.

Table 1: Means and Standard Deviations for Positive Emotion in Tweets as a Function of Sex and Social Status.

Sex			
Men		Women	
Low (n=141)	High (n=884)	Low (n=914)	High (n=189)
7.99 (13.75)	4.18 (7.53)	6.98 (10.35)	5.10 (7.00)

Note: Numbers reflect percentage of language in Tweets that included words of positive emotion.

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CONCLUSION

In conclusion, this examination of emotionally-linked language in famous Twitter users suggests that impression management may be more important than other determinants of linguistic behavior. Specifically, happier, positive short statements were common among those who had fewer followers and thus less "status" on Twitter, and that being spare with words obviated sex differences that are typically seen in language use. Of course, longer verbalizations (in any form, including those on social media outlets that afford lengthier postings) may reveal different patterns, but our findings indicate that when confined to say something relatively succinct, those with lower status will employ positivity to get attention.

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CONFLICTS OF INTEREST

The authors have no disclosure or competing interests and this research was unfunded.

CONSENT

There is no consent required for research with public documents, and research used public-domain material (Twitter), which does not require Institutional Review Board (IRB) approval.

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