



# Use Data for Education

## Take Li Deyu's Self-reported Texts of Two Demotions as an Example

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**Abstract.** In the education and teaching of linguistics, psychology, literature, history and other related fields, teachers and students usually analyze the psychology and image of characters by studying the historical background and the author's life experience. Given the limited language text data available for analysis and the long longitudinal time span, however, teachers and students cannot establish an objective understanding of the characters' psychology, nor can they form a good grasp of the characters' images. As a result, the conclusion concerning character psychology in daily education and teaching reflects a more subjective tendency, which is characterized by the self-subjective analysis of teachers and students. Based on the foregoing content, teachers and students should consider and use some ways to explore the objective psychological characteristics of characters in education and teaching. Consequently, this study takes Li Deyu's psychological characteristics, a major figure of the "Niu-Li Factional Strife" in the late Tang Dynasty, as an example, based on the language big data and the Classical Chinese version of Linguistic Inquiry and Word Count (CC-LIWC) as research methods, aiming to clarify the significance of this research to relevant education and teaching. To this end, after sorting out the language text data related to the characters, this research utilizes data analysis to explore the psychology of Li Deyu, so as to obtain objective data. Li Deyu, as the leader of the Li faction, had twice served as prime minister and twice been demoted, with his political career full of ups and downs. With Li Deyu's self-reported texts after his two demotions as the research content, this research encoded them into two distinct groups: Group A and Group B. Meanwhile, the CC-LIWC, an independently-developed program for text analysis, was utilized to conduct a word frequency analysis. Relevant research findings demonstrated that words expressing anger and dissatisfaction were observed to be more prevalent in Li Deyu's self-reported texts after the second demotion than after the first, the frequency of words conveying sadness decreased after the second demotion. The results indicated that Li Deyu was more inclined to become angry and resentful after the second demotion than the first. It can be seen that during the education and teaching of language, psychology, and other related fields, teachers and students can refer to the research methods in this paper to analyze the psychology and images of the characters, thus leading to more objective and realistic education and teaching methodologies. Furthermore, this research holds significant benefits in nurturing students' spirit of exploration

in diversified aspects, such as using language text data and psycho-semantic dictionaries to quantitatively analyze character psychology and the group culture of a specific era or region comprising multiple characters.

**Keywords:** Education and teaching · Teachers and students · LIWC · Character psychology

## 1 Introduction

This research aims to explore the psychological characteristics of characters and grasp their images through data collection and language processing, with a view to applying them to daily education and teaching in related fields and disciplines such as language, literature, psychology, history, etc. In the teaching of current middle schools and higher education institutions, the vast majority of teachers and students are accustomed to exploring the characters' psychology by studying the background of the times and summarizing the characters' life experiences. This kind of subjective judgment failed to enable teachers and students to obtain a detailed understanding of the specific psychological state of the specific characters at that time. Hence, this research is committed to determining a correct and objective method for analyzing the characters' psychology in current education and teaching, especially an objective and effective method for exploring the characters' psychology regarding the analysis of ancient literature, history, and culture. Given the peculiarities of the times and language, this research intends to analyze the psychological changes and development of the historical figures in classical Chinese by means of big data analysis and the excavation of their self-reported texts. In other words, this will enable teachers and students to better grasp the character's psychology and emotion in daily education and teaching. Owing to the characteristics of old texts in classical Chinese as well as a large amount of data available, this research can analyze the psychological state of historical figures through the collection, processing, and accurate presentation of data by means of big data. In this connection, taking Li Deyu as the research object and the psychological exploration of Li Deyu as an example, this research demonstrates a practical and feasible research method in education and teaching to promote the objective research of ancient figures and culture. Li Deyu was one of the six great politicians in ancient China (Liang, 2014). As a famous politician in the late Tang Dynasty, Li Deyu was involved with six dynasties and engaged in political activities for over 40 years. As a rare and outstanding politician in the late Tang Dynasty, he was adept with both the pen and the sword. He assisted Wuzong extensively and revived royalty several times (Tian, 1989). Li Deyu played an important role in the court at that time and delayed the downfall of the Tang Dynasty to some extent. He had several ups and downs in his official career, experiencing two demotions in its course. Since such major events can be expected to have a certain impact on a person's mind, analyzing the psychological changes of historical figures before and after major events can help us explain and understand the development of historical figures and events (Münsterberg, 2010). As the leader of the faction of Li in the struggle between the factions of Niu and Li in the late Tang Dynasty, he was psychologically affected by the ups and downs of his official career to some extent. Therefore, understanding the changes to Li Deyu's

psyche after the two demotions is of great importance to studying his psychological development throughout his life.

Previous studies held similar views on Li Deyu's psychological characteristics after the first demotion but differed on the effects of the second demotion. Wang (2020) found that Li Deyu felt depressed, dissatisfied, and helpless after the second demotion. Wang and Cheng (2010) suggested that Li Deyu was full of resentment and embitterment for being demoted without reason. The research above indicated that Li Deyu was angry and resentful after the second demotion. Nevertheless, a different point of view is held by Zhang (2019) that Li Deyu adopted a mood of leisure, self-adaptation, and self-cultivation when being alone. In the face of mid-life malaise and even death, Li Deyu did not blindly blame fate or other people and had a good state of mind (Han & Ma, 2017). Based on the studies above, it is found that there is a contradiction in these two different points of view. Because a considerable amount of time has elapsed since the death of the subjects, modern psychology methods are not viable for studies like these, and previous research about Li Deyu was only based on the subjective expression of words. Therefore, the judgment of development and changes of his psychological characteristics was lack of corresponding objective data as supplementary material, and the conclusion was inevitably unobjective. Wu (1987) pointed out that the studies of historical figures had often fallen into the rut of pragmatism and subjectivism for a long time. There is a lack of research on individual psychological activities and psychological characteristics from the perspective of one person, and the paucity is severe when it comes to empirical or quantitative approaches.

Given the contradiction between the two different viewpoints on Li Deyu's psychological changes and development after his two demotions, this research intends to make a quantitative psycho-linguistic analysis of Li Deyu's psychological change after his two demotions based on relevant self-reported texts.

Many researchers have successfully employed the Classical Chinese version of Linguistic Inquiry and Word Count (CC-LIWC) as a valuable tool, as evidenced by A Study on the Psychological Changes of Su Shi before and after the Wutai Poetry Case Based on Classical Chinese Analysis of Ma (2021), Research on Zhang Juzheng's Psychological Characteristics Based on Big Data in Classical Chinese of Li (2021), and Psycho-linguistic Changes Associated with Historical Celebrities in Henan using Classical Chinese Big Data of Zhao et al. (2021). Currently, Li Deyu's self-reported texts retain a wide range of forms such as poetry, ode, and article, among which the article is deemed to have higher ecological validity.

The research methods involved in psychology are empirical methods and survey methods, which, however, are rarely used effectively in historical psychology. Especially, it is difficult to conduct investigations and surveys on historical figures, with solely relevant results obtained indirectly. This makes the aforesaid process reflect a certain one-sidedness, subjectivity, and a tendency to be divorced from fact (Hu, 1993). Hence, it is helpful to objectively present Li Deyu's psycho-linguistic characteristics and his psychological changes after his two demotions by basing the research of historical psychology on the big data in the classics. Meanwhile, this method is conducive to reducing the subjectivity of the conclusion and the inconsistency of subjective evaluation, thus deepening the understanding of the subject. Moreover, through the characterization of

angry, sad, and deficiency-marking words in the CC-LIWC, this research further clarifies the changes in the frequency of similar words after Li Deyu’s two demotions. By comparing the word frequency changes concerning “lack and deficiency” in deficiency-marking words, for instance, it can be seen that Li Deyu’s inner dissatisfaction increased after his second demotion compared to that after the first one. Likewise, by comparing the word frequency changes concerning sad (i.e., sad, dejected, and despair) words, it can be seen that Li Deyu experienced more sadness after his first demotion than the second one. Instead, Li Deyu’s second demotion seemed to make him angrier than the first. Informal dictionaries cover four parts, including “linguistic processes, social processes, personal concern, and informal language.” The word “angry” here originates from the explanation of “angry” in “social processes,” including “hateful, complaining, and angry.” As this research focuses on the analysis of Li Deyu’s individual psychology, the relevant content is mainly developed from the “social processes” in the dictionary. A detailed chart and the extent of Li Deyu’s anger after his two demotions are shown in Fig. 2 as well as Figs. 7 and 8 in Chapter III, respectively.

## 2 Methods

The two demotions Li Deyu experienced in his life were at the age of 47, one year after he became chancellor, and at the age of 60, five and a half years after he became chancellor. The gap between these two demotions is nearly 12 years. Due to the long longitudinal time and the same nature of events, this paper compared, analyzed and mined the texts of two demotions and obtained the corresponding results of Li Deyu’s psychological changes and development after two demotions through big data. By computing the use frequency of certain categories of words in the two demotions with CC-LIWC mentioned above, it can help reveal psychological differentials in these two stages from the perspective of language expression (please see the Fig. 1 for the specific flow chart).

Based on the considerations above, the following relevant data were collected in this study: Li Deyu’s first demotion was from October, the 8<sup>th</sup> year of Taihe era (834 AD) to September, the 5<sup>th</sup> year of Kaicheng era (840 AD). During this period, he wrote a total

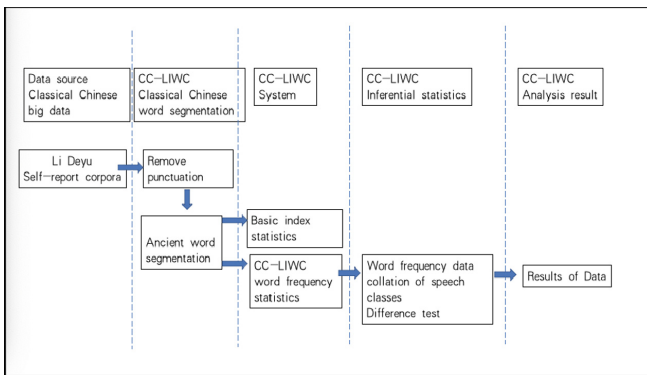


Fig. 1. The specific flow chart

of 30 texts, including 27 odes, 0 epitaph and 3 proses, with a total of 13,222 characters. Li Deyu's second demotion was from March, the 6<sup>th</sup> year of Huichang era (846 AD) to January, the 4<sup>th</sup> year of Dazhong era (850 AD). During this period, he wrote a total of 53 texts, including 0 ode, 2 epitaphs and 51 proses, with a total of 20,725 characters.

The current controversy of the existing studies mainly lies in whether Li Deyu's psychology is towards anger and sorrow or calm and peace after his second demotion. To address the issue, this study discussed the words representing *social processes*, particularly, *sad* (e.g., crying, grief, sad), *anger* (e.g., hate, kill, annoyed) and *discrep* (e.g., should, would, could) in the data. The words representing *discrep* are related to 'deficiency, lack, shortage' in the field of psychology. Li Deyu was deported to Hainan province, which at that time was an untraversed and distant island with arduous living conditions and a harsh environment. The climate there was sizzling and humid, and the cultural and economic conditions were backward. Even worse, the place was often plagued by miasma, epidemics, and rebellions charged by the local barbarians (Wang & Cheng, 2010). Li's wife, Liu Zhirou, accompanied the deported Li Deyu to Yazhou and died due to the tiring journey and the 'lack of doctors to provide medicines for the years' (Sun, 2020). The death of his wife out of the medical resource shortage had an inevitable impact on the demoted Li's psychology, which may have also intensified his sentiments of anger, sadness, and void. Hence, this study focused on Li's uses of words representing *anger*, *discrep*, and *sad*.

Using the CC-LIWC and Python, the aforementioned ancient Chinese texts were analyzed by rank sum test and difference test. Then, the psychological characteristics and changes in the psychology of Li Deyu before and after the two demotions were investigated.

### 3 Results

Through the rank sum test based on the CC-LIWC and Python analysis of the self-reported text data produced by Li Deyu, some statistics concerning Li Deyu's first and second demotions were generated. The results show that among the 78 word categories in the CC-LIWC, 32 of them are significantly correlated between Li's first and second demotions, accounting for 41% of the total number. Among the 32 categories, the major part of them is related to *social processes*, and only a small number of words fall into *personal concern* and *spoken categories*, except for the words of *linguistic processes* such as pronouns, auxiliaries, and adverbs. As mentioned in the Introduction, this study focused on the words representing *anger*, *discrep* and *sad*. Further, according to the results, it can also be observed that the psychological characteristics of Li Deyu differ between his first and second demotions, considering the fact that the use of the words representing the aforementioned three dimensions changed significantly.

anger	detestable , grumble , wrath
sad	sad , dejected , despair
discrep	lack , deficiency

Fig. 2. The meaning of angry, discrep and sad

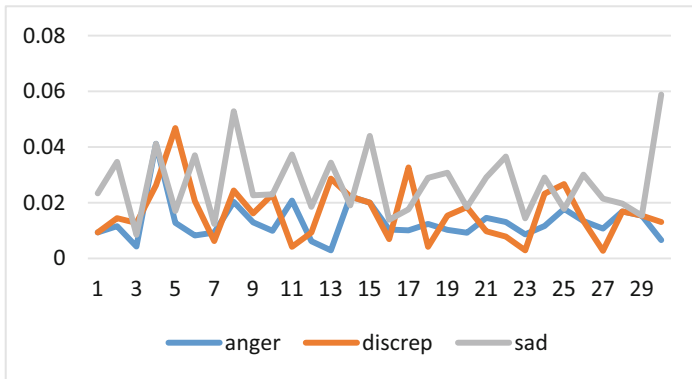
The meaning of angry, discrep and sad in the LIWC semantic dictionary are presented below (see Fig. 2).

The word frequencies of the words representing *angry*, *discrep*, and *sad* in the 30 texts after Li Deyu’s first demotion are presented below (see Fig. 3, 4).

The word frequencies of the words representing *angry*, *discrep*, and *sad* in the 53 texts after Li Deyu’s second demotion are presented below (see Fig. 5, 6).

anger	discrep	sad
0.00935	0.00935	0.02336
0.01156	0.01445	0.03468
0.00424	0.01271	0.00847
0.0412	0.02622	0.0412
0.01277	0.04681	0.01702
0.00823	0.02058	0.03704
0.00929	0.00619	0.01238
0.02033	0.02439	0.05285
0.01294	0.01618	0.02265
0.00987	0.02303	0.02303
0.02075	0.00415	0.03734
0.00617	0.00926	0.01852
0.00287	0.02865	0.03438
0.02222	0.02222	0.01905
0.02	0.02	0.044
0.01038	0.00692	0.01384
0.01005	0.03266	0.01759
0.0124	0.00413	0.02893
0.01026	0.01538	0.03077
0.00922	0.01843	0.01843
0.01456	0.00971	0.02913
0.01305	0.00783	0.03655
0.00862	0.00287	0.01437
0.01163	0.02326	0.02907
0.01778	0.02667	0.01778
0.01338	0.01338	0.0301
0.01072	0.00268	0.02145
0.01685	0.01685	0.01966
0.01538	0.01538	0.01538
0.00654	0.01307	0.05882

Fig. 3. Word frequency liwc result of the first demotion



**Fig. 4.** Word frequency statistics of the first demotion

After his second demotion, his psychological characteristics changed, which is evidenced by the increased occurrences of the words representing *angry* and *discrep*, and decreased occurrences of the words representing *sad* (see Fig. 7, 8).

Note: *STD* denotes standard deviation with 9 decimal places retained; *a* represents Group a, *b* represents Group b; *p* values were retained to 4 decimal places, \* $p < 0.05$ .

The above results show that Li Deyu tended to be angrier and more dissatisfied in the development of his psychological characteristics after the second demotion, compared with that after the first demotion.

## 4 Discussion

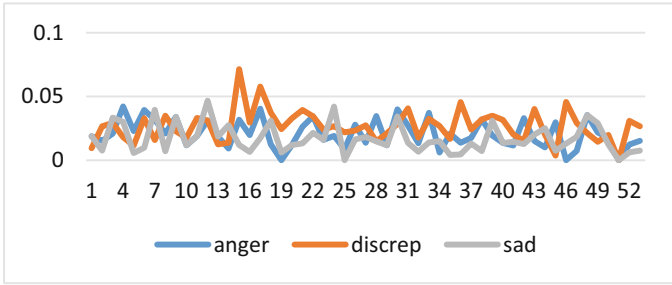
This paper compared two groups of data, i.e., the self-reported texts produced by Li Deyu after his first demotion (Group a) and his second demotion (Group b), by using an ancient Chinese version of the CC-LIWC. Our results demonstrate the psycholinguistic differences of Li Deyu between the two periods. The comparative analysis shows that the word frequencies of the word representing *anger* and *discrep* after Li's second demotion have increased significantly compared with that after the first one, whilst the word frequency of the words representing *sad* has decreased. Thus, it can be inferred that Li Deyu was inclined to be angry and discontented after his second demotion.

The words representing *anger* are related to 'abomination, complaint, and anger' in the field of psychology and 'soldier, death, and number' in ancient Chinese texts. The English word 'anger' originates from the Greek word *chole* which is associated with the physiological aspect (Yu, 2022). Before Seneca, philosophers had different definitions of anger. Aristotle in *De Anima* considered anger as a burning desire to repay pain. Ancient Greek philosophy considered anger as a burning desire to avenge insults. Posidonia from the Stoics deemed anger as a burning desire to inflict punishment on the one who has inflicted unjust harm on you. Seneca considered anger as a 'desire to inflict punishment' (Seneca, 2010). Turning to the domain of psychology, anger can also be defined in a number of ways. Spielberg et al. (1983) considered anger as an emotional state consisting of a series of feelings with varying intensity levels, which can range from

anger	discrep	sad
0.01887	0.00943	0.01887
0.01521	0.02662	0.0076
0.02092	0.02929	0.03347
0.04217	0.01807	0.03012
0.02286	0.01143	0.00571
0.03947	0.03289	0.00987
0.03162	0.01581	0.03953
0.02098	0.03497	0.00699
0.03409	0.02273	0.03409
0.0117	0.01754	0.0117
0.01896	0.03318	0.01896
0.03113	0.03113	0.04669
0.01863	0.01242	0.01863
0.00917	0.01376	0.02752
0.03175	0.07143	0.0119
0.01967	0.02951	0.00656
0.04046	0.0578	0.01734
0.01242	0.03727	0.03106
0	0.02439	0.0061
0.01198	0.03293	0.01198
0.02632	0.03947	0.01316
0.03448	0.03448	0.02155
0.016	0.024	0.016
0.01916	0.02682	0.04215
0.00873	0.02183	0
0.02791	0.02326	0.01628
0.0137	0.0274	0.01826
0.03465	0.01485	0.01485
0.01171	0.02108	0.01171
0.04	0.02857	0.03429
0.02715	0.04072	0.01357
0.0133	0.01774	0.00665
0.03721	0.03256	0.01395
0.00599	0.02695	0.01497
0.02083	0.01667	0.00417
0.0137	0.04566	0.00457
0.01751	0.02407	0.01313
0.03203	0.03203	0.00712
0.01938	0.03488	0.03101
0.01357	0.03167	0.01357
0.01159	0.02029	0.01449
0.03299	0.01523	0.01269
0.01508	0.0402	0.0201
0.01005	0.0201	0.02513
0.02974	0.00372	0.00743
0	0.04575	0.01307
0.00733	0.0293	0.01832
0.03546	0.02128	0.03546
0.02174	0.01449	0.02899
0.01741	0.0199	0.01244
0	0	0
0.01235	0.03086	0.00617
0.01521	0.02662	0.0076

Fig. 5. Word frequency liwc result of the second demotion

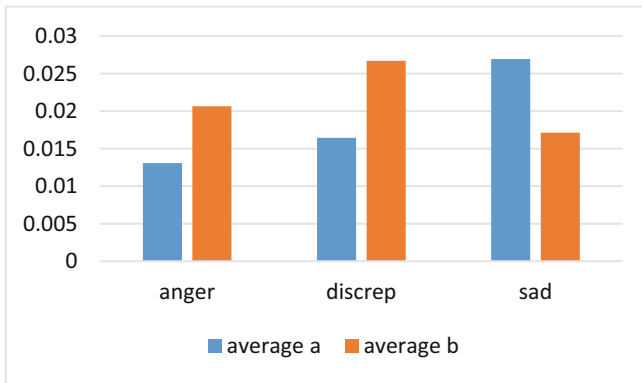




**Fig. 6.** Word frequency statistics of the second demotion

	p value	average a	average b	std a	std b	(b - a) / (b + a)	p <= 0.05
anger	0.00058	0.013086455	0.020647796	0.007149455	0.011056435	0.22414432	TRUE
discrep	0.0001	0.016447502	0.026699215	0.009980815	0.012476543	0.237601217	TRUE
sad	0.00018	0.026928431	0.017123467	0.012118481	0.011084013	-0.222577555	TRUE

**Fig. 7.** Comparison of data results between group A and B



**Fig. 8.** Comparison of data results between group A and B

distress to irritation to rage or fury. Kassinove and Sukhodolsky (1995) defined anger as a negative emotional state with varying intensity levels and persistence levels, which is usually associated with emotional arousal and the perception of being misunderstood by others. Frijda argued that individuals experience anger when they feel intentionally insulted or hurt by others. Ortony et al. described anger as an unpleasantness experienced by individuals when they are blamed for their behavior. In short, anger has been described

as an emotional response to an unfavorable violation of social rules (Carver & Harmon-Jones, 2009). The results of the current study based on Li Deyu's self-reported texts show that Li's uses of the words representing *anger* and *discrep* have significantly increased after his second demotion, which reveals his heightened sentiments of anger and discontent. Wang and Cheng's (2010) study proposed that Li Deyu was full of resentment and hatred for his banishment despite his innocence. Wu and Li (2005) also concluded that Li Deyu was sad and angry after his demotion in that he felt his merits and talents were not properly appreciated. Li (2010) found that Li Deyu's sorrow and anger were made explicit in his anthology *Anxious Records* which was written after his second demotion. The current paper found that the use of the words representing *anger* has been elevated after his second demotion, echoing the aforementioned research.

The words representing *discrep* are related to 'deficiency, lack, and shortage' in the field of psychology and 'desire, possibility, and appropriateness' in ancient Chinese texts. The second associated word set appeared several times in Li's self-reported texts after his second demotion. According to *Xiandai Hanyu Cidian* (Contemporary Chinese Dictionary, 2016) and *Hanyu Da Cidian* (Comprehensive Chinese Word Dictionary, 2012), the word 'desire (欲)' can be interpreted as an expression of fondness, hope, need, and willingness. After Li Deyu's second demotion, the word 'can't (不能)' occurred 40 times, 'can (能)' 38 times, 'wish (愿)' 4 times, 'want (要)' 2 times, 'will (有意)' 1 time. The words related to 'possibility' occurred 31 times in the texts of this period. According to the 6<sup>th</sup> edition of *Xiandai Hanyu Cidian*, 'appropriateness (宜)' can be understood as something suitable, appropriate, and obligatory. In this designated period, the word 'may (可)' occurred 39 times, 'can (可以)' 26 times, 'can be called (可谓)' 21 times, and 'fine (行)' 5 times. In addition, in these texts, the words directly expressing 'deficiency, lack, and shortage' occurred 19 times in total, with 'insufficient (不足)' occurring 8 times, 'less (少)' 6 times, and 'none (无有)' 2 times, 'shortage (缺)' 2 times, 'lack (乏)' 1 time.

Li Deyu was further demoted to Yai Prefecture (in modern Haikou, Hainan), a badland with scare materials. During this trip, his wife died and his son was demoted. The Preface to the Epitaph of Liu's Family in Pengcheng, the Great Cave Refiner in Yandong Palace, Tang Maoshan describes his wife Liu's death from disease. When he was demoted to the south, his youngest son Li Ye was also demoted to Lishan County, Mengzhou (Zhou, 1992). From the above, it can be seen that Li Deyu was in a difficult situation and lived in poverty (Wu & Li, 2005). Li Deyu had incomparable merits but was demoted to the island of Hainan in old age. The difficulties and poor living condition he encountered can be seen from his poem "Discussing the Ministry with Yao", which reads "In the world, there is no one to save us and the resources are exhausted. We run out of money and food and so many people are hungry. The only thing that I deeply regretted is that I have to starve to death when I am in such an old age. At the end of October, the medicine was run out and there was no doctor to treat the patient. I can only depend on myself to live in the world" (Zou, 2004). As can be seen from the above research, the place where Li Deyu lived after the second demotion was poor and couldn't be compared with the place where he was demoted for the first time. After the second emotion, many problems, such as poor life, lack of materials and medicines and family separation increased his psychological gap compared with his first demotion, which made him more anger to some extent. This is consistent with the analysis of Li Deyu's

self-reported text, which shows that the frequency of the words representing *discrep* in the second demotion is increased compared with that in the first one.

The psychological meaning of words representing *sad* is related to “sadness, depression and despair”. According to Levenson’s basic emotion theory, sadness is initially triggered by archetypal events. In constantly perceived events, when the archetype meets the condition of loss, it will trigger sad emotions (Levenson, 2003). It is generally believed that sadness is an emotional reaction caused by separation, loss and failure. For each individual, loss and failure are inevitable and these events even run through the whole life course, so sadness is closely related to individual survival adaptation (Jiang & Zhao, 2006). A Dictionary of Modern Chinese Adjective Usage and Modern Chinese Dictionary explain sadness as “sad and upset”; The Great Chinese Dictionary interprets it as “grief and sadness”. The commonly used adjective meaning of sadness is “sad”, so “sadness” means that the subject has an unhappy emotion psychologically due to the external stimulation (bad things happen), and the subject can’t bear this emotional stimulation (Wang, 2018). Sadness is an emotional experience when an individual is in an unhappy situation, and it is the inner feeling of losing or not gaining (Wang, 2016). According to the existing results, Li Deyu was demoted to Hainan at the age of 60 and lost his official career prospects. After the second demotion, he felt deeply sad. According to Wang’s (2020) research, when he was demoted to Yai Prefecture (in modern Haikou, Hainan), he was deeply sad not just because of his old age, but of the harsh living environment. Liu’s (2010) research also points out that Li Deyu felt grief and upset at the moment. However, because Li Deyu suffered from illness during the whole Huichang era when he was the chancellor, he wrote to the emperor to resign or ask for sick leave to recuperate at home (Han & Ma, 2017). From the third year to the sixth year of Huichang era, Li Deyu wrote six Memorials to the Emperor Stating My Willingness to Resign. One of the Memorial written in the third year of Huichang era described that he was sick and weak. It can be seen that Li Deyu made the preparation psychologically to leave the political arena. Therefore, it can be seen that although Li Deyu was sad after the second demotion, his sad words have decreased because he made full preparations for this demotion. The above contents are consistent with the research results of this paper. According to the research results of this paper, the frequency of words representing *sad* after the second demotion is lower than that of the first demotion, which shows that Li Deyu is more anger after the second demotion than the first time but becomes less sad.

The above research results show that Li Deyu’s psychological characteristics and changes after his first demotion are consistent with the views presented in relevant literatures. The psychological characteristics and changes after the second demotion are consistent with some of the existing literatures. The results show that Li Deyu is angry and indignant after the second demotion because he thinks he has high achievements but is relegated (Wu & Li, 2005). Li (2010) believes that Li Deyu’s anthology *Anxious Records* written after the second demotion is to express his worries and indignation. Li Deyu is full of resentment and hatred for his innocence and demotion (Wang & Cheng, 2010).

This study can objectively show Li Deyu’s psychological semantic features and changes after his two demotions, but it also has some shortcomings. First of all, this study can’t collect complete materials because these ancient people are from the remote

past, which is so far away from us. Secondly, it does not analyze the self-reported texts of other periods except Li Deyu's two demotions. Finally, this study is only a case study of Li Deyu's psychological changes and development after major events in his personal life, without taking into account other party figures in the same period.

## 5 Summary

From the above research, it can be seen that even if the longitudinal time span is long, the psychological characteristics and changes of the studied characters can be obtained according to the above analysis. It can be seen that the above research methods provide a feasible method for teachers and students to analyze the psychology and image of the characters in a specific and in-depth way in education and teaching. This method is more suitable for middle school and higher school students. Since the ancients are far away from us, and the psychology of ancients cannot be judged by subjective consciousness, the process and method of this paper can be referred to if historical figures and ancient culture are to be studied in education and teaching. By using big data and the CC-LIWC to study Li Deyu's self-reported texts, this paper obtains the relevant data of his psychological changes and development after two demotions, showing that Li Deyu is angrier and less sad after the second demotion compared with the first one. We obtain the objective data through using CC-LIWC and Python to explore the psychological changes and development after Li Deyu's two demotions. This is a new method to study the psychological characteristics of ancient figures and their changes in education and teaching. At the same time, this method also tells us that in daily education and teaching, we can explore historical cultural characteristics and psychological changes of historical figures by means of data analysis in combination with a large number of language text contents. To sum up, the application of big data is of great significance in analyzing the psychological characteristics of ancient culture and historical figures as well as in educational research. Therefore, the above methods can be extended to the daily education of literature, linguistics, psychology and other disciplines to help us reduce subjective assumptions and increase objective analysis. In order to more rigorous, objective, pragmatic attitude towards education and teaching content. In the future education and teaching, teachers and students can use big data to integrate, calculate and analyze educational content, so as to form a comprehensive and objective grasp of educational content.

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