
Personality Traits and Microblogging Behavior of Weibo Users: Onlies versus Others

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Abstract

Much research have been done to investigate the personality and daily behavior of these only children ("Onlies") due to the Chinese one-child-per-family policy, and the singleton generation is reported to be more selfish. As microblog becomes increasingly popular recent years in China, we carried out a study to look into the behavior of Onlies and children with siblings("Others") on social media. 1792 users were enrolled and their Weibo data were downloaded through Weibo API, at the same time, they were instructed to complete big-five personality questionnaires to assess personality traits. We run independent-samples t-test on both personality and microblogging behavior data to compare Onlies with Others . Our result on personality is quite different from previous studies: the results indicate that Onlies outscore Others in openness, but no significant difference in other personality traits. Correspondingly, Onlies differ a lot from Others according to various microblogging behaviors, such as tweeting, mutual following and so on. Generally speaking, Onlies are more active and positive on Weibo, which may in a sense reflect their optimistic attitude.

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Introduction

More than three decades have passed since the execution of the one-child-per-family policy in China. After the carried-out of the one-child policy in 1979, the fertility rate in China fell from 2.63 births per woman in 1980 (already a sharp reduction from more than five births per woman in the early 1970s) to 1.6 in 2007 [1]. As of 2007, approximately 35.9% of China's population was subject to a one-child restriction[2].

Many researches have been done to compare personality traits and daily behaviors between only children ("Onlies") and children with siblings ("Others"), and examine the effects of one-child policy on children development. It is usually hypothesized that Onlies are spoiled, egocentric, maladjusted and less cooperative, and they are often called "little emperors". However, there are a lot of controversy observations over the hypothesis of Onlies . Mara [12] reported that people born after the introduction of the one-child policy were, not only less trusting, less trustworthy, and more pessimistic, but also less competitive, less conscientious, and more risk-averse. Contrary to Mara's finding, many other researches find that Onlies performed better in several fields such as motivation to achieve success, and Onlies always perform as well as Others in daily behavior. This motivates us to do more investigation to move this research further. Sina Weibo, which is China's twitter, is now one of the most popular

internet services in mainland China, with more than 300 million registered users [20]. Many people spend much time on Weibo, and it is said that Weibo has become an important part of human life [4]. Much research have been conducted to identify the association between social media usage and user's personality [9, 18], and the results indicate that social media behaviors not only correlate with personality traits, but also reflect user's personality traits to some extent [8, 3].

Related Work

There has been much work on assessing the difference between Onlies and Others, especially in China due to one-child policy after 1979. But researches draw quite opposite conclusions on the same problem. Some studies support the assumption that Onlies in China is a spoiled generation. [13] invite 933 children to take part in their study, and they find that Onlies are more egocentric, whereas Others possess the positive qualities of persistence, cooperation, and peer prestige. [11, 19, 12] take similar comparative studies on behaviors and personality as well as mental health, and their conclusions generally support the assumption. Other researches figure out that there does not exist personality-trait differences between Onlies and Others . [6] conduct a study of 1,000 school children, and they find that very few Onlies effects are detected. Even more, Onlies outperform Others on both academics and physical. [15, 5] also suggest that the one-child policy in China is not producing a generation of "little emperors". Some researchers still reach the conclusion that Onlies have lower levels of fear, anxiety and depression [24]. However, most of the above observations are derived from parents, teachers or peers, and self-report measurements are seldom taken.

Variables		population	Percentage
HomeTown Location	city	1087	60.66
	town	337	18.80
	rural location	368	20.54
Age	>32	98	5.47
	<=32	1694	94.53
Gender	male	653	36.44
	female	1139	63.56

Table 1. Descriptive statistics of subjects

Feature	Description
bi_followers_count	number of user's mutual followers
followers_count	number of user's followers
friends_count	number of user's friends
des_evaluation	sentiment evaluation of description
statuses_count	number of user's statuses
ori_sta_count	number of user's original statuses
repost_count	number of user's reposted statuses
screenname_len	length of screen name
fav_sta_count	number of user's favourite statuses
picture_count	total number of user's pictures
annotation_count	total number of user's annotations
first_sta_period	period user most likely to give first status per day
last_sta_period	period user most likely to give last status per day
fav_sta_period	period user most likely to give most statuses per day
sta_count_p0	number of statuses user created between 0:00 and 6:00
sta_count_p6	number of statuses user created between 20:00 and 24:00
...	...

Table 2. Some of extracted features

Objective measurement on subjects' behavior has not previously been used. To the best of our knowledge, this is the first attempt to investigate the difference on web behavior between Onlies and Others till now. Psychological analysis on social media has received considerable attention recently. Personality has been reported to be relevant to many types of behaviors, and it even can be predicted from social media profile [9]. It has been shown in [22] that extroversion and conscientiousness positively correlate with the perceived use of social media sites. Extroversion is also shown to have a positive correlation with perceived usage with less long sentences, less complex writings, and more social and positive emotional words [18]. Agreeable individuals would like to use more positive emotion words and first person plural pronouns. [23] show that people often make friends with individuals with high agreeableness, and they tend to choose friends with similar agreeableness, extroversion, and openness scores. Our research investigating difference between Onlies and Others has two major contributions. The One is that subjects are in such a large scale and randomly selected all over the country instead of choosing from the same place, and the personality difference has been tested again in a larger scale. The other is we compare the social media behavior between Onlies and Others for the first time, and the behavior is objective rather than subjective. In this paper, we use big-five inventory to assess subjects' personality, at the same time, we collect their microblog data to measure subjects' behavior objectively. We then compare the difference between Onlies and Others participants using statistical analysis method. At last, we discuss the experiment results from the view of psychological perspective.

Dataset

The dataset consists of 1792 copies of SinaWeibo users' usage data together with corresponding personality-trait scores. The Weibo data can be split into several categories as follows:

1. user's personal profile, including nickname, address, gender, birthday, personalized domain name, description and so on.
2. friends and followers
3. posts (statuses)
4. retweet posts
5. comments
6. time to publish posts
7. annotations and pictures
8. others.

Big-Five theory is the mostly used personality measurement [10], it proposes five basic traits to form human personality: openness, conscientiousness, extraversion, agreeableness and neuroticism [7]. In our study, we took big-five personality inventory as the instrument to assess user's personality traits, and the big-five scores are measured in continuous value.

Data Collection

Using Sina Weibo API (<http://open.weibo.com>), we first collected about 100M Weibo user IDs, then randomly chosen 20,000 user IDs. We crawled these 20,000 users' Weibo data to build the data set. By using Weibo API '@' function, we invited the users to be volunteers to participate the study. At last, we collected 1792 copies of qualified personality trait self-reports. Among them, 933 subjects are Onlies, and the rest are Others. The average age of Onlies is 23.2, and Others is 23.4. Some statistical results about the subjects are listed as follows in Table 1. As shown in Table 1, most of the subjects are birthed after 1979, and about 40% of subjects come from rural area or town.

Feature Extraction

As our collected Weibo dataset is raw data, the first step is to extract behavior features. We use some

Personality trait	Only child	Mean	Std. deviation
Extraversion	1	24.63	5.40
	0	27.59	5.52
Conscientiousness	1	27.71	5.49
	0	27.96	5.53
Agreeableness	1	32.20	5.00
	0	32.55	4.67
Neuroticism	1	24.02	5.72
	0	24.09	5.61
Openness	1	36.34	6.19
	0	35.11	6.20

Table 3. Group Statistics of Five Personality Traits

behavior features correlated with personality [17] by following the behavior framework [16]. We totally extract 32 features for one user from the Weibo data. Some of the features are listed in Table 2.

For some features, we just process the original data directly, for example, the number of statuses. We ran a program to analysis users' descriptions, to identify each description as positive, neuter or negative. To calculate the time of creating statuses, we divide a whole day into 7 periods: 0:00-6:00, 6:00-8:00, 8:00-11:00, 11:00-13:00, 13:00-17:00, 17:00-20:00, and 20:00-24:00 , and they correspond to period0, period1, period2, period3, period4, period5 and period6 respectively. We then count the number of statuses that the user creates in each period.

Personality-trait assessment

As we received 1792 copies of effective big-five personality questionnaires, we calculated scores for each personality trait from the 44 items in the inventory. In total, each subject is evaluated in five personality dimension.

Dimension	t	df	p
Extraversion	0.16	1790	.88
Conscientiousness	0.97	1790	.33
Agreeableness	1.53	1790	.13
Neuroticism	0.27	1790	.78
Openness	4.20	1790	.01

Table 4. Independent Samples T Test of Five Personality Traits

Firstly, we present the group statistics of five personality traits in Table 3. At "Only Child" column, 1 means Onlies group, 0 means Others group. The independent t-test results for five personality traits are depicted in Table 4, in which, 'df' is short of degree of freedom. This Table 4 shows the results of both homogeneity of variance test and independent-samples t-test.

As shown in Table 4, all five personality traits conforms equal variance assumption, the difference between Onlies group and Others group is significant in the dimension of openness, and the other four dimension is not significant at level 0.05. Combining with Table 3, we can conclude that Onlies outscore Others in openness at a significant level. We also compare microblogging behaviors between two groups through independent t-test method. Most of the group statistics results are listed in Table 5, and the major independent t-test results are followed in Table 6. From Table 6, it is obvious that two groups exist significant difference in 12 behaviors at level 0.05, and the twelve behaviors (the meanings of which have been described in Table 2) are: bi_followers_count, des_evaluation, statuses_count, picture_count, annotation_count, first_sta_period, sta_count_pe2, sta_count_p3, sta_count_p4, sta_count_p5, sta_count_p6 respectively.

Combing with Table 5, we can draw such a conclusion that Others have more mutual followers, however, Onlies seem to be more active, such as, earlier to post first status, post more statuses in total as well as in most periods of a day, upload more original pictures, and write more annotations. Onlies usually describes themselves more positive than Others.

Discussion

The question that arises from this research is how the results can be understood. To make the question clear, we should first look into the five personality traits carefully.

The results in Section 4 manifest that Onlies have a significant higher score than Others on openness, whereas no significant difference on other personality traits. Our results is a little different from previous researches that states no obvious difference exists between Onlies and Others , and is quite different from those take the generation of singleton as the "spoiled generation". Onlies even perform more active and

Microblogging behavior	Only child	\bar{x}	S.D.
bi_follower_count	1	130.65	133.24
	0	160.75	198.54
des_evaluation	1	2.24	0.62
	0	2.17	0.65
statuses_count	1	2834.19	1376.10
	0	2642.42	1307.04
picture_count	1	334.15	345.60
	0	236.58	379.24
annotation_count	1	269.23	255.72
	0	191.72	226.71
first_sta_period	1	1.71	1.71
	0	1.96	1.88
sta_count_p2	1	381.20	269.96
	0	352.66	277.89
sta_count_p3	1	320.37	179.13
	0	299.28	168.16
sta_count_p4	1	580.69	320.38
	0	539.05	317.48
sta_count_p5	1	461.84	264.84
	0	434.27	256.26
sta_count_p6	1	797.64	489.64
	0	733.55	445.22

Table 5. Group Statistics of Microblogging Behaviors

positive on Weibo, and they are more willing to express themselves and communicate with others.

Other scholars suggest that age may have skewed subjects' behaviors on social media. As to this problem, we quote words from [12]: "Teasing out age, period, and cohort is a classic identification problem," says Yong Cai, a demographer at the University of North Carolina, Chapel Hill. Cameron says her team included the 1975 and 1983 cohorts in part to identify peer effects, or the impact of growing up surrounded by Onlies. That did not turn out to be a significant factor, and when these two cohorts are excluded, similar results can be obtained which suggests that age had little effect.

In general, personality is determined by his/her own inborn temperament and parental training after birth comprehensively. For the last 30 years, Chinese have almost simultaneously experienced both the policy of reform and opening-up and one-child policy. With the rapid growth of the national economy and the implementation of one-child policy, it facilitates parents to put more resources on elaborately nurturing of their only child. By contrast, Others have to share the love of their parents, especially in rural areas (in our study, 309 out of 368 subjects rural area are Others), where growth environment is far worse than in cities. All of these factors may contribute to shape the disposition of Openness. In addition, according to Big-Five theory, Openness refers to the ability of absorbing new material. Individual high on Openness tends to be regarded as a preference for novelty, tolerance of different values, and interest toward different habits and lifestyles. Sina Weibo was founded in 2009. For Chinese youth, it is regarded as a novelty nowadays. Participants high on Openness would be expected to be active users of Sina Weibo and tend to perform multiple kinds of Weibo usage behavior, such as posting more microblogs and uploading more pictures. As the descriptions, Onlies express more positive, which might

because of more support from their parents. In our study, the average age of subjects is 23.3(about 95% of subjects are birthed after 1979), and they are exactly the age to go into the society. Now in China, inflation, especially the price of housing, may be a smaller trouble for those who can get support from their parents than those who can not.

Conclusions

In this paper, we have investigated the problem of Onlies and Others, by comparing the personality traits and Sina Weibo behavior between these two groups. We obtained 1792 copies of SinaWeibo data, together with corresponding big-five personality-trait scores. We conducted independent t-test on the data to test if the only-child factors have effect on personality traits and Weibo performances. We find Onlies scored higher than Others on Openness, and Onlies are generally more active and positive on Sina Weibo. We explained the phenomenon through one-child policy in China: onechild families are able to invest more to their children, and provide more support. Apparently, there exists space we can do to put forward this exploration. In the future, we will check other factors which may affect the results by multi-way analysis. Meanwhile, we try to test more psychological factors, such as, mental health and social attitude. We want to know the effect of one-child policy on individual development.

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References

- | Microblogging behavior | t | df | p |
|------------------------|-------|------|------|
| bi_follower_count | -3.79 | 1790 | <.01 |
| des_evaluation | 2.40 | 1790 | <.05 |
| statuses_count | 3.02 | 1790 | <.01 |
| picture_count | 5.70 | 1790 | <.01 |
| annotation_count | 6.77 | 1790 | <.01 |
| first_sta_period | -2.92 | 1790 | <.01 |
| sta_count_p2 | 2.20 | 1790 | <.05 |
| sta_count_p3 | 2.57 | 1790 | <.05 |
| sta_count_p4 | 2.76 | 1790 | <.05 |
| sta_count_p5 | 2.24 | 1790 | <.05 |
| sta_count_p6 | 2.89 | 1790 | <.01 |
- Table 6.** Independent Samples T Test of Microblogging Behaviors
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