A Comparative Analysis of School Pupils’ Daily Habits in Germany and China

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Abstract—The study of school pupils’ daily habits is of importance for diverse fields such as sociology and education. Previous related work mainly focused on some specific attribute or habit of students, which ignored many important factors and failed to exploit the correlation among habit-related factors. In this paper, we conduct a comparative analysis of school pupils’ daily habits in Germany and China from different perspectives. We first collect a set of valid data about the daily habits of school pupils by an online user study. Based on this dataset, we analyze the similarity and difference between Germany and China students from three mainly habit-related aspects, i.e., personal attribute, school performance and extracurricular habit. Furthermore, we study the correlation among several attributes or habits. The comparative analysis illustrates several interesting results and help us gain deep insights into the education and human behavior of school pupils from the two countries.

I. INTRODUCTION

The study of daily habits of school pupils is of importance in many areas. On one hand, it can help the society know the current teens’ daily life. On the other hand, it can also help predicting what our society looks like in the near future as the young are growing up to be the mainstream of the society. The daily habits of the school pupils contain numerous aspects, such as their likes and dislikes of particular courses, their favorite online websites and smart phone applications, and the relationship with their families and classmates. The analysis of these habits can benefit researchers and educators who care about students’ education, physical as well as mental health, their long-term performance and beyond.

The school pupils’ habits have become an interesting research topic and attracted a number of researchers from a variety of fields, such as sociology, pedagogy and computer science. However, the efforts in comparative analysis across different countries are limited, and most of the study focused on university students [1]–[5]. Existing cross-country comparative studies on pupils [6]–[13] mainly focused on certain specific issues like health, thus cannot offer a more comprehensive picture of pupils’ daily habits.

As two representative countries from western and eastern worlds, Germany and China share a compelling drive to search for young generation of professionals facing both a rapid economic development and a global competition on highly educated labor forces. To this end, schools play a major role in the personal characteristics, intellectual, and vocational development of adolescents. In this paper we conduct a comparative analysis of school pupils’ daily habits in Germany and China from numerous perspective. We collect a set of valid data about the daily habits of school pupils by an online user study. Based on this dataset, we analyze and compare the similarity and difference between Germany and China from three habit-related aspects (e.g., the personal attribute, school performance and the extracurricular habit). Besides, we investigate the correlation between some attributes or habits. Our comparative analysis of daily habits among different countries or ethnicities shows several interesting results and can help us gain deep insight into some questions about the education and human behaviors (Section III and Section IV show the results in details).

The rest of the paper is organized as follows: Section II describes our collection method and the overview description of the dataset. Section III shows the preliminary comparative analysis from three different aspects. Section IV conducts correlation analysis. Section V discusses related work. Finally, Section VI concludes the paper.

II. DATASET

Before introducing the main analytical results, we set out in this section by describing our dataset collection and some preliminary statistics.

To obtain the true dataset of the school pupils’ daily habits in Germany and China, we first designed an online anonymous questionnair, in which we totally designed 54 questions. Due to the space limitation, please refer to the online form for the details1. Our questions are mainly divided into three major factors as follows:

- Personal attribute: including age, gender, personality, family economic status, and etc.
- School performance: including social ability, class performance, interests, grades, and etc.
- Extracurricular habit: including training courses, sports, tour, watching TV, and etc.

We spread the online questionnaire to some middle schools across the countries (i.e., China and Germany) through online mobile communication applications, such as wechat2 and the personal characteristics, intellectual, and vocational development of adolescents. In this paper we conduct a comparative analysis of school pupils’ daily habits in Germany and China from numerous perspective. We collect a set of valid data about the daily habits of school pupils by an online user study. Based on this dataset, we analyze and compare the similarity and difference between Germany and China from three habit-related aspects (e.g., the personal attribute, school performance and the extracurricular habit). Besides, we investigate the correlation between some attributes or habits. Our comparative analysis of daily habits among different countries or ethnicities shows several interesting results and can help us gain deep insight into some questions about the education and human behaviors (Section III and Section IV show the results in details).

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2http://www.wechat.com
Finally, after filtering out invalid responses, we totally collected 416 valid questionnaire responses, among which 373 responses are from Chinese school pupils and the other 43 are from German school pupils.

As shown in Figure 1, we present some summary statistics of our dataset. Figure 1a and Figure 1b show the distribution of our dataset in terms of gender and age. Figure 1c plots the comparison of family economic condition. The students mainly in ages from 12 to 20. We can observe that about 72.1% of Chinese students live in medium economic families. In Germany, a large portion of pupils live in rich families, 72.1% of Chinese students live in medium economic families.

III. PRELIMINARY COMPARATIVE ANALYSIS

In this section, based on the collected questionnaire dataset, we present a preliminary comparative analysis from different perspectives to investigate the similarity and difference between Chinese and German pupils’ habits. We mainly study pupils’ habits from three main aspects: the personal attribute, school performance and extracurricular habit. From this preliminary study, we can find some significant and interesting results and phenomenon, which can be used for education-related research and applications.

A. Personal Attribute Comparison

In this subsection, we analyze and compare the personal attributes of school pupils from three different perspective, including family, character and social situation.

Family. Figure 2a shows the relationship between pupils’ parents. From Figure 2a, the parents’ relation is quite similar for school pupils in two countries. For more than half of Chinese pupils and German pupils all enjoys a good parents’ relationship. There are only 3% of Chinese pupils said their parents tend to have a little or much quarrel. 16% of German pupils think their parents quarrel little while no German pupils report much quarrel occurred between parents. It is interesting that almost 37.8% of Chinese pupils and 18.6% of German pupils do not want to answer this question. We think maybe some pupils would not like to share the real atmosphere of their families even in an anonymous survey due to some privacy protection.

Figure 2b shows the relationship between school pupils and their parents. The distribution in Figure 2b looks quite like that in Figure 2a. More than half of school pupils in both countries have good relationships with their parents, and the second largest groups in both countries (32.9% for China and 37.2% for Germany), do not want to answer this question. Only 7.4% and 7.0% of Chinese and German pupils said their parents have quarrel. In a word, most of the school pupils in two countries live in a warm harmonious family environment, which benefits their growth.

Figure 2c shows the number of brothers and sisters. For two countries, the largest groups (32.9% for China and 37.2% for Germany) both have one brother or one sister. However, in China, the second largest group have no brother or sister while in Germany, they have two brothers or sisters. This results from family planning policy in China.

Figure 2d illustrates the relationship between school pupils and their brothers or sisters. 45.6% of Chinese pupils have good relationship with their brothers or sisters, and 23% have little quarrel. For German pupils, the largest group report they have little quarrel. There are also more German than Chinese pupils (15.9% vs. 5.3%) shown up in “much quarrel” and “some good some bad” options.

Person Character. We also check the personal characteristics of these school pupils as shown in Figure 2e. Although the largest groups in two countries are both “depends”, which means their personal character will depend on the environment. Many Chinese students think they are very sociable and outgoing. Compared to German, Chinese students are quite balanced in each character options. For Chinese pupils, the largest group is 24.9% and the smallest group is 11.26%. For German pupils, the largest group is 55.8% and the second smallest groups are 0% (slow) and 2.3% (sociable).

Social situation. Figure 2f shows the number of friends per pupil in reality. The largest group of Chinese pupils (51.7%) have more than 20 friends in reality while most of German (34.8%) have 12–20.

Figure 2g shows the number of online friends per pupil. It is quite interesting that the largest group of Chinese pupils
(34.3%) have no friends online while all German pupils have at least one online. For German pupils, most of them (25.5%) have 2-5 friends online.

Figure 2h shows the time of communicating with friends per day in reality. It is interesting that largest group of Chinese pupils (26.6%) cost 1-2 hour in communicating with friends while most of the German students use more than 5 hours. Chinese pupils have more friends in reality but they communicate less with each other. This is might due to the different recognition of the friendship relation among the pupils in the two countries.

Figure 2i shows the time of communicating with friends online. For two counties, the largest groups (56.8% for China and 38.2% for Germany) only take less than 1 hour per day. In total, German pupils use more time in communicating with online friends.

According to the above social situation analysis and comparison, we find that the Chinese pupils have less communication with friends. One possible reason is that Chinese pupils may not like or are not good at communicating with others and the other reason is that Chinese pupils do not have much time on communicating because they have relatively heavier study workloads compared with German students.

B. School Performance Comparison

In this subsection, we analyze and compare their habits at school, containing social situation and study interests.

Friends at school. Figure 3a shows the distribution of the number of friends per pupil at school. It is very interesting that the largest group in China (36%) have more than 20 friends while none of German students have that many. Most of German pupils (48.8%) have 6-12 friends at school. We think this is caused by the different students number in the two countries, namely, there are many more students in a class and a school in China compared with Germany.

Fig. 2: Personal Attribute Comparison.
Attitude towards teacher. Figure 3b shows the pupils’ attitude towards their teachers. Compared to German students, more Chinese students tend to have positive feeling towards their teachers. 68.0% of Chinese pupils like (or very like) their teachers while 60.4% of German students just think normal about their teachers. This may be caused by the “respecting teachers” traditions in the Chinese culture.

Figure 3c shows their teachers’ attitude towards school pupils. Students in two countries share similar feelings. 67.3% of Chinese and 81.4% of German pupils think their teachers hold a normal (not good or bad) attitude towards them.

Study. Figure 4 shows which subjects students like most. For Chinese pupils, three most important subjects in their exam to higher-level schools are their favorites, which are mathematics, literature (i.e., Chinese) and the first foreign language (i.e., English). However, a very large group of German pupils are fond of Computer and Art.

C. Extracurricular Habit Comparison

In this subsection, we check the their life after school, including study, sports and travel.

Extracurricular study. As shown in Figure 5a, 72.1% of German pupils do not attend extracurricular training classes. Nevertheless, 55% of Chinese pupils would go to extracurricular training classes. Especially, at least 7% of Chinese pupils go to extracurricular training classes for more than 4 hours per week. None of German pupils need to take much time on the extracurricular training class. This may be caused by the great pressure for Chinese pupils to enter more prestigious (and more competitive) high schools and universities.

Figure 5b shows the time of study after class. For two countries, the largest groups (31.4% for China and 46.5% for Germany) both take 1-2 hour to study after class. However, Chinese pupils tend to spend more time on study. More than 40% of Chinese pupils spend more than 7 hours on study while only 4.6% of German pupils need to do that.

Sports. In Figure 5c and Figure 5d, we can observe that most German pupils (65%) like sports very much while most Chinese pupils (35.1%) hold a normal attitude towards sports. Besides, German pupils tend to spend much more time on sports. However, it is interesting that 5.6% of Chinese pupils will spend more than 14 hours a week on sports while none of German pupils spend such a long time in sports.

Travel. Figure 5f shows the time of travels per year. For two countries, the largest groups (35.9% for China and 62.8% for Germany) both travel 2-3 times per year. As a whole, German pupils tend to have more chances to travel. 17.1% of Chinese pupils never go out for travel. More than 25% of German pupils travels more than 4 times per year while only 8% of Chinese pupils have this kind of opportunities. This may be also related to the heavy study tasks.

IV. Correlation Analysis

In this section, we analyze the correlation between attributes or habits. For example, if pupils spend more time on the extracurricular training class, they may have less time in communicating with their parents or friends. We calculate the correlation between different questions in the questionnaire to reveal these relationship. As shown in Table 1, due to the space limitation, we only list several more outstanding findings.

Although most correlations in the table are very low-degree, which means there is no clear linear relationship between these answers, there are still three interesting phenomenons.

For German school pupils, the highest correlation is about 0.72. However, for Chinese school pupils, this correlation is very low, 0.12. The pairwise factors are the number of friends at school and the time spent with friends at school.
For the German pupils, more friends lead to more time spent with friends. It is congenial with reason and common sense. However, for the Chinese pupils, more friends do not mean the time spent with friends become longer. Although they have more friends at school than German pupils, the time they spent with friends is quite limited. It may be caused by two reasons. On one hand, the Chinese pupils may have a low “standard” for friends. At least they do not spend so much time on these so-called friends. On the other hand, Chinese pupils just do not have enough free time at school for having fun with friends.

For German pupils, the second highest correlation is about 0.55. Nevertheless, for Chinese pupils, this correlation is very low (0.29). The pairwise factors are the economic status of pupil’s family and the times playing with friends in each week. For the German pupils, a better economic status leads to more chances to play with friends. For the Chinese pupils, there is no clear relationship between these two factors. The main reason may still be the limited time they spent with friends. For the Chinese pupils, whether rich or poor, they all have to spend most time on study.

For the other pairs of factors, the correlations for both countries are all not very strong. Compared with China, German correlations are usually stronger. There are only 8 Chinese correlations beyond 0.2 (low) and none of them is beyond 0.5 (strong). There are only 66 German correlations beyond 0.2 (low) and 2 of them is beyond 0.5 (strong).

V. RELATED WORK

Nowadays most of related work focus on the study of the university students’ behavior and habits across different regions or countries. Ehrich et al. discussed the different attitudes towards plagiarism between Chinese and Australian university students [1]. Bickenbach et al. compared university students’ entrepreneurial intentions in Hong Kong and Guangzhou [2]. Woolnough et al. talked about the factors affecting student choices of career in science and engineering, including students in Australia, Canada, China, England, Japan and Portugal [3]. Li et al. compared the determinants of international students’ academic performance between Chinese and other international students [4]. Kim et al. analyzed the cultural difference in motivations for using social network sites between American and Korean college students [5].

There are some related work on the comparative study about pupils in different countries. Zhao et al. compared
the allergy problem among pupils in schools in China and Sweden [6]. Pey et al. compared middle school students' attitudes towards science in England, Singapore and the USA [7]. Andreasen et al. studied standardised testing in compulsory schools in England and Denmark [8]. Brunner et al. discussed the life-time prevalence and psychosocial correlates of adolescent direct self-injurious behavior in 11 European countries [9]. Gibson et al. and SadlerSmith et al. focused on experiences of bullying-related behaviors by English and Zambian pupils [13]. However, they mainly focus in a very specific question like health, thus cannot give a more comprehensive picture of daily habits.

Generally speaking, to our knowledge, our work is the first one to give a comparative analysis of school pupils' daily habits between different countries from the aspects of personal attribute, school performance and extracurricular habit as well as their correlations.

VI. CONCLUSION

Our paper conducts a comparative analysis of school pupils' daily habits in Germany and China from three main perspectives. In order to make this study, we first collect a set of valid data on the daily habits of school pupils by online user study. Based on this dataset, we analyze and compare the similarity and difference between Germany and China from three habit-related aspects (i.e., personal attribute, school performance and extracurricular habit). In addition, we study the correlation between some attributes or habits. We believe this preliminary study on the school pupils’ daily habits would shed lights on some questions about education or human behavior. Next, we will investigate this topic based on more abundant heterogeneous data collected through a variety of means, such as mobile and IoT sensing, crowdsourcing and online social applications.

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REFERENCES