

Research on the Relationship between Dormitory Ties and Study Engagement of College Students Under the Same Roof

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Abstract—Social network influences individual decision-making behavior. Based on 13695 paired samples constructed by 166 college students, this paper examines the relationship between dormitory ties and similarity of study engagement. The results show that: the existence of dormitory ties between students make their study engagement more similar, the three factors of students study engagement (motivation, energy and absorption) are more similar with the existence of dormitory ties; if two students' family rearing styles is the same, the existence of dormitory ties between students make the factor of absorption more similarity; if two students' family rearing styles is different, the existence of dormitory ties between students make the factor of absorption and motivation more similarity.

Keywords—dormitory ties; study engagement similarity; social network; similarity

I. INTRODUCTION

The improvement on education quality has important significance on establishment of innovation-oriented country and transformation of education development mode, referring to an important measure in deepening education reform. It proposes in the Outline of the National Program for Medium and Long Term Educational Reform and Development (2010 to 2020) that colleges should “fully arouse students' learning initiative”. Decision of the Central Committee of the Communist Party of China on Several Major Issues of Deepening Reform in a Comprehensive Way requires the formation of “effective form and long-term mechanism of loving learning” in comprehensively deepening education reform. Learning burnout prevails among college students [1], so how to improve college students' learning initiative has become the topic concerned by the society. As the opposite of learning burnout, study engagement gradually becomes the research hotspot of educational field. The researches on study engagement in available literature include the definition of study engagement and the empirical research on influence factors of study engagement. In definition of study engagement,

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Schaufeli [2] proposes the concept of study engagement through extending job engagement and defines study engagement as an active mental state related to learning from the perspectives of vitality, dedication and concentration. Fredricks [3] defines study engagement from the perspectives of behavior engagement, emotion engagement and service engagement. After analyzing definitions of study engagement, Zhang Na [4] thinks study engagement means “students learn actively, think deeply and energetically meet challenges and setbacks as well as have active emotional experience”. The existing researches have analyzed the influence factors of study engagement from the perspectives of personal factor including sex factor [5-6] and environmental factor [7-9]. Besides, some scholars research the influence of peer factor on study engagement. [10-11]

Whether to carry out study engagement is a decision behavior. From the perspective of hypothesis of rational man in the classical economics, the study engagement of college students depends on the balance between their input costs in learning and prospective earnings. Under the environment of socialization, the social relations of individuals influence their behavior decision. [12] The study engagement of individuals is restricted by social relations. Therefore, the research on study engagement must consider social ties of individuals instead of separating individuals from the social relations. [13] As the channel of information transfer, social ties have “contagion effect” which will make individuals in social ties influence each other in decision making and then strengthen the consistency of their decision behavior. The existing researches on social ties of company senior managers indicate the decision behaviors in enterprises are consistent because of the social ties of senior executives [14-15]. Therefore, research on study engagement of college students from the perspective of their social relations deepens the understanding of influence factors of study engagement and provides theoretical and empirical supports for education sectors, colleges and students to intervene study engagement from the perspective of social relations.

As the most important social relation of college students in school, dormitory ties greatly influence students' learning and life. [16] In most cases, dormitory tie is a passive embedded social relation (subject to school arrangement

instead of choosing roommates autonomously) among college students. It may form good dormitory atmosphere and promote the common progress of students in the same dormitory. Meanwhile, it may lead to contradictions in dormitory because of many reasons and influence the learning of members in dormitory. The existing literatures analyze the influence of college students' interpersonal relationship on their study engagement, but most researches carry out from the macroscopic perspective. They research on the existence of interpersonal relationship and how it influences study engagement instead of analyzing how social ties of college students influence the characteristics of study engagement from the microcosmic perspective. Therefore, from the perspective of social relations, this paper builds the sample of college students' dormitory ties and analyzes the existence of dormitory tie and how it influences study engagement similarity of college students.

II. RESEARCH DESIGN

A. Research Objects and Samples

This paper takes 190 sophomores in financial management major of Business College of Chengdu University of Technology as the research object. 190 questionnaires are distributed through e-mail and are connected with collecting rate of 100 percent. There are 166 valid questionnaires with effective rate of 87.36 percent. It includes 29 male students and 137 female students; 86 only children and 80 non-only children; 49 students with below average family income level and 117 students with average and above-average family income level; 149 students of the Han nationality and 17 students of ethnic minorities. Because this paper adopts the matched pair study, the number of final research sample is $(\frac{n \times (n-1)}{2})$ 13, 659 (namely $\frac{166 \times (166-1)}{2}$).

B. Measuring Tool

The study engagement of college students is measured. Same with the existing researches, [1] the study engagement of college students is measured through Chinese version UWES-S revised by Li Xiying and Huang Rong [17]. The scale includes 17 items. The questionnaire uses Likert scale, and one to seven represent respectively: never, hardly any, hardly ever, sometimes, frequent, very frequent and always. The total scale is divided into three sub-scales including motivation, energy and concentration, the values of which are the total points of the corresponding items.

Dormitory tie of college students. The dormitory data of students are obtained from the department of student affairs in Business College of Chengdu University of Technology. The dormitory building and dormitory number of each student in the sample are gained.

C. Variable Definition

This paper analyzes the similarity between dormitory ties and study engagement. If two college students have dormitory ties, is the study engagement of them more similar?

Therefore, the index of every two in the sample is calculated. Referring to the construction method of similarity of social relation index adopted by scholars [18], for numeric variable, including indexes of study engagement (ENG_total) and three factors of study engagement of motivation (ENG_1), energy (ENG_2) and concentration (ENG_3) as well as student age (Age), this paper uses formula (1) to calculate the similarity of individual variables with the above numeric features:

$$\Delta Y_{i,j} = Ln(Y_i / Y_j) \quad (1)$$

In this formula, i and j represent college student i and j respectively. Y includes ENG_total, ENG_1, ENG_2, ENG_3 and Age. $\Delta Y_{i,j}$ represent the difference of college student i and j in indexes of (ENG_total, ENG_1, ENG_2, ENG_3 and Age). According to formula (1), the smaller the value of $\Delta Y_{i,j}$, the smaller the differences of college student i and j in corresponding variables will be, namely, the similarity level of college student i and j is higher.

The definition of similarity of categorical variable index is as follows: if student i and j live in the same dormitory (the same building and dormitory number), the value of Dormitory ties is one, and otherwise the value is zero. If student i and j study in the same class, the value of BanJi is 1, and otherwise the value is zero. According to the number of children in each student's family, if the student is only child, the value of DSZN is one, and otherwise the value is zero. The relation of situation of children in the family (ZN) is established. If the values of DSZN of student i and j are the same (both student i and j are only child or non-only child), the value of ZN is one, and otherwise the value is zero. If the education backgrounds of the father of student i and the father of student j are the same, the value of the relationship of education background of father (Fdegree) is one, and otherwise the value is zero. If the education backgrounds of the mother of student i and the mother of student j are the same, the value of the relationship of education background of mother (Mdegree) is one, and otherwise the value is zero. If the numbers of people in family of student i and j are the same, the value of relationship of family scale (Fnum) is one, and otherwise the value is zero. If the rearing styles of student i and j are the same, the value of relationship of rearing style (JY) is one, and otherwise the value is zero. If the family incomes of student i and j are the same, the value of family income relationship (Income) is one; otherwise the value is zero.

D. Statistics Method

This paper needs to pair every two individuals in the sample to form the final master sample. First, Matlab software programming is used to calculate and pair in formula (1) for numeric variable index; second, for classification characteristic index, Ucinet 6 is used to build the network matrix of social relation of characteristic indexes and then Matlab software programming is used to pair; finally, the research data sample is obtained according to the

numeric and classification indexes after merging and pairing. Stata 12 software can get the result of empirical analysis.

$$ENG_{i,j} = \alpha + \beta_1 Dormitory_ties + \beta_2 Age_{i,j} + \beta_3 BanJi_{i,j} + \beta_4 ZN_{i,j} + \beta_5 Mdegree_{i,j} + \beta_6 Fdegree_{i,j} + \beta_7 JY_{i,j} + \beta_8 Income_{i,j} + \beta_9 Fnum_{i,j} + \varepsilon \quad (2)$$

The explained variable ENG is the index of study engagement, including ENG_total, ENG_1, ENG_2 and ENG_3. The explanatory variable is Dormitory ties. The rest

E. Regression Model

In order to check the influence of dormitory ties on college students' study engagement, this paper builds the following regression model:

factors are control variables. The above definitions are included in the definition of variables, so it will not be introduced in detail.

TABLE I. DESCRIPTIVE STATISTICS OF MAJOR VARIABLES

Variable	Observed value	Mean value	Standard deviation	Min value	Max value
ENG_1	13695	0.259	0.238	0	1.946
ENG_2	13695	0.0286	0.232	0	1.946
ENG_3	13695	0.271	0.255	0	1.946
ENG_total	13695	0.246	0.227	0	1.946
Dormitory_ties	13695	0.024	0.153	0	1
Age	13695	0.041	0.0319	0	0.203
BanJi	13695	0.17	0.376	0	1
ZN	13695	0.498	0.5	0	1
Fdegree	13695	0.204	0.403	0	1
Fnum	13695	0.253	0.435	0	1
JY	13695	0.594	0.491	0	1
Mdegree	13695	0.211	0.408	0	1
Income	13695	0.356	0.479	0	1

III. EMPIRICAL ANALYSIS

A. Descriptive Statistics and Mean Test Results

The basic descriptive features of major variables are shown in "Table I". The mean value of study engagement ENG_total is 0.246, indicating the mean diversity factor of study engagement in the sample is 0.246. The mean values of diversity factor of three factors (ENG_1, ENG_2, ENG_3) in study engagement are 0.253, 0.286 and 0.271 respectively, indicating the similarity of motivation factor (ENG_1) is higher among three factors of the study engagement; the mean value of Dormitory ties is 0.024, indicating the sample with dormitory ties accounts for about 2.4 percent of the total sample.

"Table II" shows the mean test result of study engagement and dormitory ties. First, let's see whether the mean value of study engagement (ENG_total) in different groups of dormitory ties. The table shows the mean value of significant difference of ENG_total is 0.027, indicating the mean diversity factor of ENG_total in sample without dormitory ties is obviously higher than that of sample with dormitory ties. In other words, the similarity of study engagement of students in the same dormitory is obviously higher than that of students in different dormitories. Similarly, in the three factors of study engagement, the mean diversity factors of (ENG_1, ENG_2, ENG_3) in sample without dormitory ties are obviously higher than that of sample with dormitory ties.

TABLE II. MEAN TEST RESULT OF STUDY ENGAGEMENT AND DORMITORY TIES

		ENG_total	ENG_1	ENG_2	ENG_3
	Observed value	Mean value	Mean value	Mean value	Mean value
Dormitory_ties=0	13368	0.247	0.260	0.287	0.272
Dormitory_ties=1	327	0.220	0.231	0.260	0.238
Mean difference		0.027**	0.029**	0.027*	0.034**

^a. * p<0.1; ** p<0.05

B. Analysis on Dormitory Ties and Similarity of Study Engagement

"Table III" shows the regression result of dormitory ties and study engagement similarity. First, let's see the overall

regression analysis result of study engagement similarity and dormitory ties. According to line (1) in the table, when the variables of student factor and family factor are controlled, the regression coefficient (-0.032) of Dormitory ties are significant (5 percent) and negative, indicating the difference

of study engagement of two students is small if they have dormitory ties. In other words, the dormitory ties make the study engagement of two students more similar. Lines (2), (3) and (4) show the regression results of dormitory ties and vitality, dedication and concentration of study engagement. When the variables of student factor and family factor, the regression coefficients (-0.034, -0.031 and -0.038) of dormitory ties and vitality, dedication and concentration of study engagement are significant (5 percent) and negative,

indicating dormitory ties make the similarity of three factors in study engagement of two students higher. According to comparison of regression coefficients, the influences of dormitory ties on similarity of concentration, motivation and dedication in study engagement decrease in turn. Therefore, the above research results indicate as a passive embedded social relation, dormitory ties will obviously influence study engagement.

TABLE III. REGRESSION RESULTS OF DORMITORY TIES AND STUDY ENGAGEMENT SIMILARITY

	ENG_total	ENG_1	ENG_2	ENG_3
	(1)	(2)	(3)	(4)
Dormitory_ties	-0.032	-0.034	-0.031	-0.038
	(2.407)**	(2.467)**	(2.055)**	(2.655)***
BanJi	0.012	0.012	0.011	0.010
	(2.247)**	(2.136)**	(1.727)*	(1.726)*
Age	-0.016	0.027	-0.151	0.018
	(0.260)	(0.428)	(2.177)**	(0.273)
ZN	-0.008	-0.007	-0.011	-0.002
	(1.998)**	(1.618)	(2.348)**	(0.358)
Fdegree	-0.004	-0.007	-0.003	-0.004
	(0.808)	(1.333)	(0.596)	(0.745)
Mdegree	0.008	0.007	0.005	0.011
	(1.611)	(1.331)	(0.911)	(2.019)**
Income	-0.023	-0.012	-0.032	-0.030
	(5.784)***	(2.898)***	(6.910)***	(6.958)***
JY	-0.057	-0.059	-0.055	-0.050
	(14.620)***	(14.274)***	(12.204)***	(11.842)***
Fnum	0.005	0.004	0.009	0.001
	(1.120)	(0.759)	(1.728)*	(0.113)
Constant term	0.290	0.298	0.338	0.310
	(58.637)***	(57.525)***	(59.846)***	(58.002)***

b. * p<0.1; ** p<0.05; *** p<0.01 (Absolute value of T value is included in brackets)

C. Analysis on Dormitory Ties and Similarity of Study Engagement in Samples Different in Rearing Style

Existing researches show different rearing styles will influence students' study engagement. [19] Therefore, this paper further discusses whether different rearing styles of students will lead to the different influences of dormitory ties on study engagement. Table 4 and table 5 respectively show the influence of dormitory ties and study engagement similarity under the same and different rearing styles. On the whole, the regression coefficients of dormitory ties and study engagement similarity are significant negative under the same and different rearing styles of students, indicating the study engagement similarity caused by dormitory ties will not be different because of different rearing styles. However, the differences mainly embody in different factors of study engagement. Specifically, "Table IV" shows if the rearing styles are the same, the regression coefficient between Dormitory ties and concentration factor (ENG_3) is significant (10 percent) and negative, but the regression coefficients between it and the other two factors of study

engagement are negative but not significant. In comparison, "Table V" shows if the rearing styles of students are different, the regression coefficients between Dormitory ties and motivation factor (ENG_1) and concentration factor (ENG_3) are significant and negative, but the regression coefficient between it and dedication factor (ENG_2) is negative but not significant.

TABLE IV. REGRESSION RESULTS OF DORMITORY TIES AND STUDY ENGAGEMENT SIMILARITY UNDER SAME REARING STYLE

	ENG_total	ENG_1	ENG_2	ENG_3
	<i>(1)</i>	<i>(2)</i>	<i>(3)</i>	<i>(4)</i>
Dormitory_ties	-0.021	-0.022	-0.021	-0.027
	(1.663)*	(1.635)	(1.342)	(1.869)*
BanJi	0.012	0.009	0.011	0.012
	(2.158)**	(1.512)	(1.582)	(1.985)**
Age	-0.199	-0.174	-0.405	-0.146
	(3.352)***	(2.774)***	(5.525)***	(2.161)**
ZN	-0.008	-0.007	-0.008	-0.003
	(2.055)**	(1.755)*	(1.649)*	(0.634)
Fdegree	-0.004	-0.001	-0.007	-0.006
	(0.818)	(0.200)	(1.125)	(0.994)
Mdegree	-0.001	-0.004	-0.003	0.003
	(0.242)	(0.732)	(0.499)	(0.623)
Income	-0.018	-0.004	-0.021	-0.031
	(4.338)***	(0.830)	(4.292)***	(6.758)***
Fnum	0.013	0.011	0.017	0.009
	(2.936)***	(2.284)**	(2.988)***	(1.685)*
Constant term	0.238	0.244	0.289	0.267
	(55.832)***	(54.242)***	(54.964)***	(54.928)***

c. * p<0.1; ** p<0.05; *** p<0.01 (Absolute value of T value is included in brackets)

TABLE V. REGRESSION RESULTS OF DORMITORY TIES AND STUDY ENGAGEMENT SIMILARITY UNDER DIFFERENT REARING STYLES

	ENG_total	ENG_1	ENG_2	ENG_3
	<i>(1)</i>	<i>(2)</i>	<i>(3)</i>	<i>(4)</i>
Dormitory_ties	-0.051	-0.056	-0.050	-0.058
	(1.859)*	(1.926)*	(1.645)	(2.014)**
BanJi	0.013	0.017	0.011	0.007
	(1.211)	(1.558)	(0.923)	(0.629)
Age	0.281	0.357	0.257	0.283
	(2.265)**	(2.765)***	(1.906)*	(2.174)**
ZN	-0.008	-0.007	-0.015	0.000
	(1.046)	(0.803)	(1.791)*	(0.025)
Fdegree	-0.005	-0.017	-0.000	-0.002
	(0.533)	(1.675)*	(0.014)	(0.232)
Mdegree	0.021	0.022	0.017	0.021
	(2.153)**	(2.209)**	(1.574)	(2.052)**
Income	-0.031	-0.025	-0.047	-0.029
	(3.940)***	(2.961)***	(5.370)***	(3.457)***
Fnum	-0.007	-0.007	-0.003	-0.012
	(0.781)	(0.754)	(0.271)	(1.232)
Constant term	0.282	0.290	0.330	0.299
	(32.005)***	(31.623)***	(34.369)***	(32.421)***

d. * p<0.1; ** p<0.05; *** p<0.01 (Absolute value of T value is included in brackets)

IV. CONCLUSION

A. Research Conclusion

First, as a passive embedded social relation, dormitory ties obviously affect the study engagement similarity of college students. Three factors namely motivation, energy and concentration of study engagement present the similarity because of the dormitory ties. The research conclusion of this paper supports the research conclusion about the influence of

peer effect on study engagement from the macroscopic perspective, but the research in this paper carries out the empirical test from the microcosmic perspective of social network. The research indicates the social ties of college students play an important role in learning behaviors.

Second, the research shows the influences of dormitory ties on study engagement similarity under different rearing styles are different. If the rearing styles of college students are the same, the influence of dormitory ties on college students' study engagement similarity embodies in

concentration; if the rearing styles of college students are different, the influence of dormitory ties on college students' study engagement similarity embodies in motivation and concentration. It indicates the influences of social ties on college students' learning behaviors will change with the differences of intrinsic property of students.

B. Research Suggestion

1) *Create good learning atmosphere in dormitory*: Since dormitory ties can influence the learning behaviors of members in the same dormitory, the creation of good learning atmosphere in dormitory can effectively improve students' interests in active learning. The study engagement can improve through contagion effect of dormitory members' behaviors. The high frequent appearance of "Dormitory of Excellent Students" also shows the influence of learning atmosphere in dormitory on learning enthusiasm and effects.

2) *College students form diversified social relations in school, including dormitory ties, fellow-villager relation, friend relationship and club relation, etc.* Compared with active embedded characteristics (namely whether the social ties can form between students and others depends on students' own will) of other social relations (fellow-village relation, friend relationship and club relation), dormitory ties are passive embedded (subject to school arrangement). The research indicates the passive embedded social ties will influence the study engagement similarity. The influence of active embedded social ties on college students' study engagement needs further research.

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