

# ***Research on the Impact of Peer Social Networks on Students' Physical and Mental Development and Campus Happiness***

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**Abstract:** This study addresses the influence of social networks on university students' academic performance and psychological well-being. With over forty million students engaged in higher education in China, enhancing their educational experience and mental health amidst limited resources has become crucial. Existing research often focuses on educational structures and learning experiences, neglecting campus environment-related factors. Therefore, this study emphasizes the role of social networks in shaping outcomes. Drawing from historical literature, social network analysis's efficacy in addressing societal concerns is established. Studies reveal that students with more reciprocal connections often exhibit better academic performance. This research amalgamates empirical inquiries, examining network data, academic achievements, and well-being indicators. Findings underscore social networks' potential to influence academic and psychological dimensions, offering implications for universities and students.

**Keywords:** social network analysis, higher education performance, student mental well-being

## **1. Introduction**

### **1.1. Research Background and Significance**

Based on official national statistical data from 2020, China presently accommodates an expansive cohort of over forty million students engaged in higher education. This formidable assemblage stands in contrast to a relatively finite count of approximately twenty-seven hundred higher education institutions across the nation. Consequently, enabling this substantial student populace to attain an enhanced scholastic experience within the confines of limited educational resources and ensuring their psychological well-being has evolved into a matter of paramount significance. A proliferation of research endeavors has been launched, predominantly centered upon the correlation between the educational framework and students' on-campus learning experiences. However, scant attention has been directed towards factors intrinsic to the campus environment, disassociated from the educational structure, that could ameliorate students' educational experiences. Hence, within this study, the researcher accentuates the salience of the social network as a determinant, delving into its potential influence on the academic performance and psychological well-being of university students. In the event of definitive outcomes, this research stands poised to facilitate universities

and their constituents in augmenting academic accomplishments and fostering mental well-being on campus, chiefly through cognitive and individual behavioral modifications.

## 1.2. Literature Review

In order to engage in an appropriate discourse on the subject of this study, the author initially acquaints with the significance of employing social network analysis in addressing sociological issues. According to historical literature, social network analysis, a method within the realm of sociology, was initially introduced in the 1930s, and its subsequent efficacy in addressing diverse societal concerns became apparent [1]. Studies pertaining to the presence of interpersonal networks among students and their correlation with academic performance have demonstrated a close nexus between students' academic achievements and their social network ties. Notably, students with a greater number of reciprocated social connections often exhibit enhanced academic performance [2], thus underscoring the relevance of social network analysis within this study. Concurrently, SL Thomas's research indicates that social network studies within university contexts are highly adept at discerning sub-communities among students. Such analyses frequently uncover homophily within students' social networks, implying a robust explanatory capacity of social networks in relation to behavioral patterns and social affiliations [3].

Further substantiating the pivotal role of social network analysis, an examination of collaborative study groups within a university student cohort revealed that those possessing higher centrality and greater reciprocated ties demonstrated superior academic performance, subsequently reflecting more favorable academic aptitude assessments [4]. Likewise, akin profiles of students in another study exhibited elevated indices of happiness and improved mental health states [5], thereby furnishing foundational postulates for this study.

## 1.3. Research Contents and Framework

The present study is primarily concerned with the analysis of the impact of social networks on the academic performance and psychological well-being of university students. This investigation revolves around the positioning of university students within social relational networks, alongside the examination of nodal attributes within broader social networks. The research framework predominantly entails the synthesis of antecedent pertinent research findings. To elaborate, this encompasses the assimilation of diverse empirical inquiries focused on social network analyses among university students, incorporating network data, academic achievements, and indices of psychological well-being or contentment. The synthesis and compilation of these diverse studies serve as the basis for addressing the principal research inquiries of the current investigation. That is utilizing social network analysis methodology, this study aims to investigate whether the positioning of undergraduate students within the social networks of their campus peers, coupled with pertinent network attributes, exerts an influence upon their academic performance and mental well-being during their tenure within the academic institution.

## 2. Case Description

Irrespective of the age group of students, the campus serves as an autonomous social environment within which students establish social networks. In many instances, such social networks have often been relegated to a relatively peripheral role in research pertaining to students' academic performance and educational experiences. Researchers, in their efforts to enhance educational efficiency, quality, and students' on-campus experiences, generally tend to emphasize aspects associated with educational arrangements within the school context. Nevertheless, as per the

findings of Victor Lavy & Edith Sand, students' social networks during their academic tenure significantly influence both their educational outcomes and personal well-being on campus [2].

The outcomes of this study can be substantially elucidated by prior research on social networks, where these networks are recognized as vital conduits for information circulation within communities. Furthermore, behaviors tend to disseminate widely within social networks, often achieving viral propagation [1]. Within the context of educational institutions, students' social networks can effectively disseminate academically pertinent information and amplify the propagation of behaviors among peers, thereby mutually influencing one another. Consequently, research into students' on-campus academic performance and their psychological well-being and happiness indices is progressively incorporating social network analysis as a research methodology, thereby exploring this dimension in the study of student cohorts within educational settings.

In the present paper, the author endeavors to synthesize an array of literature and empirical data employing social network analysis to investigate the interplay between students' on-campus performance and mental well-being in relation to their positioning and engagement within the campus social network. This study seeks to analyze how active participation in the collegiate social network influences and impacts academic achievements and psychological well-being for university students during their tenure on campus.

### 3. Analysis on the Problems

The forthcoming study will primarily encompass a social network analysis conducted on students within an educational setting, as indicated within the parentheses. Broadly speaking, these methodologies will focus on capturing and recording instances of social interaction among students, thereby generating networked data. Typically, these gathered social network data are directed in nature, and in certain instances, possess inherent value. This signifies that these social networks can illuminate attitudes between students towards each other and the intensity of these attitudes, or whether interactions occur between them and the frequency of such interactions.

Through this network data, researchers can also comprehend the overall scale and organizational structure of the entire social network, along with various nodes representing students' positions within these networks. Through further computations, various network-related metrics of the entire network and individual nodes can be derived, including measures such as network density, connectivity, average distance, centrality, reciprocity, and more, as referred to in the context of nursing student well-being [5].

By employing these data as independent variables and students' academic performance, mental well-being, and academic choices as dependent variables, these investigations assist the author in gaining an intuitive insight into the research questions at hand.

Based on the outcomes of various social network analysis studies conducted among distinct cohorts of students across different educational institutions, it becomes evident that students' social networks exert a significant influence on various facets of their educational experience. These encompass academic achievements, personal learning encounters, overall well-being, and individual educational decision-making.

First and foremost, it is worth noting that within the social networks of students, distinct individuals assume specific roles throughout the entire network, roles determined by their positions and degrees of engagement within the network. This phenomenon has been elucidated through a study focusing on the social networks of students within online learning discussion groups. In this study, an analysis of student social networks revealed a gradual differentiation of roles based on their levels of participation within the network, leading to varying degrees of significance and connectivity with other nodes across the network [6].

Corresponding with the aforementioned findings, it is noteworthy that students' academic proficiency and achievement can also be significantly influenced by their positional attributes within the social network. A study examining the outcomes of collaborative group learning projects and students' academic performance in the context of higher education underscores this point. The investigation delves into the intricate interplay between students' network characteristics and their scholastic achievements. The outcomes indicate that interactions among students within the social network emerge as pivotal determinants of their academic accomplishments [4].

Particularly illuminating is the revelation that active participation and positive engagement among students within the social network play a pivotal role in shaping their academic performance. When students engage constructively with their peers throughout the entirety of a learning project, maintain closer proximity to other individuals within the network, and exhibit higher out-degree and in-degree centrality scores, the resultant assignments tend to exhibit elevated levels of quality and substance [4]. This empirical observation underscores the significant influence of social network dynamics on students' academic outcomes, suggesting that a well-connected and engaged social network can act as a catalyst for heightened academic achievement.

Social network analysis not only impacts students' academic performance, but also significantly influences the pivotal decisions they make throughout their academic journey. Previous research in social network analysis has illuminated that students' decisions, particularly in the context of major selection, are considerably shaped by their social networks.

Drawing insights from a study involving over three hundred students from community colleges within the University of California system, a noteworthy connection between students' major choices and their social network relationships has been identified. The data-driven findings shed light on the remarkable homogeneity observed in individuals' major selections within their school-based social networks. Notably, individuals tend to opt for the same majors as those closely interconnected within their social network. This observation underscores the predictive role of the social network theory of homophily in anticipating personal choices during significant academic decisions [7].

In essence, these findings underscore the substantial influence of social networks not only on students' academic performance, but also on the critical decisions they make in their educational path, offering an avenue for employing the concept of homophily within the realm of social network theory to anticipate individual choices during substantial academic crossroads.

Undoubtedly, the mental well-being of students is significantly linked to their positions within social networks. In a study focused on the psychological well-being indices of nursing students in South Korea and their positions within social networks, researchers found that students with higher in-degree and out-degree centrality within the university social network generally exhibited higher levels of well-being on campus. According to the discussions by the researchers, heightened centrality often enables these students to receive learning information and resources from other members, and their positive emotions are triggered when aiding others, ultimately contributing to their heightened sense of well-being. This process is bidirectional; those students with higher centrality or greater out-degree and in-degree intersections in the social network tend to possess stronger communication and interpersonal skills, factors which frequently correlate with improved mental well-being [5].

Likewise, among international university students, the existence of social network relationships is strongly associated with their mental well-being, which researchers attribute to their relative isolation. Increased social network engagement, characterized by higher in-degree and out-degree, is often linked to better mental well-being among international students [8]. In various related studies, better mental health and higher happiness indices have consistently contributed to enhanced

academic performance for these students [9]. Consequently, this serves as a testament to the significance of social network analysis among university students.

#### 4. Suggestions

Based on the extant body of research, it is evident that the degree of engagement among students within their peer-based social networks and their positioning within these social structures constitutes a significant determinant of their mental well-being and overall academic performance during their tenure at educational institutions. In many instances, adept utilization of social network relationships can exert a positively proactive influence on students' mental well-being and scholastic achievements within the educational milieu, thus assuming a considerable role in their future societal progression. Nevertheless, it is imperative to note that not all forms of social network ties invariably yield favorable effects on students' overall experiences and performance within the academic realm. Some manifestations of social network ties have the potential to introduce disruptive elements, impeding students' academic focus or even inducing adverse repercussions on their personal well-being

Based on these findings, it is evident that the positioning of university students within the social networks of their educational institutions plays a pivotal role in shaping their academic performance and achievements. Indeed, for more mature cohorts of students, actively forging and leveraging their social networks is not only a significant step in their academic journey but also a crucial stride towards success in their broader societal pursuits [10]. Therefore, the author posits that, from a student-centric perspective, university students should engage more extensively in social networking endeavors to better establish and utilize the resources inherent in their campus-based social networks.

From an institutional educational standpoint, to facilitate and maximize the positive impact and utilization of social networks among students, it is imperative for schools to undertake concerted efforts in promoting awareness and education in this regard. Encouraging student engagement in campus social networks, fostering proactive information exchange, and cultivating a greater proliferation of social ties within these networks should be emphasized [4]. Simultaneously, the establishment of diverse student-involved on-campus entities, such as clubs or group-oriented learning initiatives, could further encourage students to establish and actively participate in social networks.

In summary, based on the conducted research and analysis, the author arrives at the conclusion that within the realm of university social networks, students naturally assume the role of network nodes, either proactively or passively. The positioning of these students within the social network significantly influences and assists their academic achievements and on-campus experiences to varying extents.

#### 5. Conclusion

Based on 2020 official statistics, China hosts over 40 million higher education students, juxtaposed with about 2,700 institutions. Optimizing their educational experience amid resource constraints and ensuring well-being gains pivotal importance. Research, mainly exploring the educational system's impact, often neglects non-structural campus factors. This study emphasizes the pivotal role of social networks, delving into their influence on students' academic and psychological dimensions. By synthesizing prior research, encompassing empirical social network analyses, academic achievements, and well-being indices, this study addresses key inquiries. Employing social network analysis, we probe how students' positioning within campus networks and pertinent

attributes shape academic and psychological outcomes, potentially aiding universities in enhancing achievements and well-being.

Based on the findings of this study, it has been discerned that individual students' centrality within their peer networks, coupled with the presence of reciprocity, exert pivotal and affirmative influences on both their academic performance and psychological well-being. Students exhibiting higher centrality tend to excel in academic assignments and other domains, alongside showcasing elevated indices of happiness in psychological assessments. The outcomes of this study hold implications for university students and institutional administrators alike, offering insights to optimize the application of social network dynamics within the current campus milieu. This, in turn, augments educational efficiency within institutions and ameliorates students' psychological well-being.

However, it is important to note that this study is not without limitations. A principal limitation lies in the exclusive reliance on secondary data sources, as opposed to original data collection and analysis. Consequently, the researcher cannot ensure an exceedingly high degree of representativeness and comprehensiveness of the employed data. To a significant extent, the subjects of this data are not homogeneously sourced from identical cultural, academic, and societal backgrounds. Given that social relationships inherently intertwine with cultural and structural societal contexts, the resultant outcomes of this study may lack universality. To address this concern, future research endeavors should delineate the research questions within distinct social and cultural contexts, employing adequately representative sample cohorts for comparative analysis.

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