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Impact of cyber-ostracism on social anxiety and Internet use in university students

Impacto del ciberostracismo sobre la ansiedad social y uso de Internet en estudiantes universitarios

Cristina López-Ráez ¹ 

Daniel Falla ¹ 

Eva M. Romera ¹ 

¹ University of Córdoba, Spain

* Corresponding author. E-mail: daniel.falla@uco.es

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ABSTRACT

The use of Relationship, Information and Communication Technologies (RICTs) has changed the way in which university students interact and relate to each other, giving rise to both positive and negative experiences, in which they must deal with risky cyber-behavior. Cyber-ostracism is a form of social exclusion in the virtual space that leads to feelings of social anxiety and that can occur in university students, causing harmful consequences. However, it has not been sufficiently explored whether this feeling can be related to an increase of Internet use due to perceived online exclusion. Focusing on this, the aim of this paper is to find out the association between cyber-ostracism and social anxiety, as well as the possible indirect effect of Internet use. A total of 1605 students from different Spanish universities participated in the study, aged between 17 and 25 years old ($M = 19.59$, $SD = 1.75$), where

66.3% were women, 31.7% men and 2% did not indicate their gender. The Internet-Related Experiences Scale (CERI), the Social Anxiety Scale for Adolescents (SAS-A) and the Cyber-ostracism Experience Scale for Adolescents were used. Statistical analyses included Student's t-test and mediation analysis with the macro PROCESS. Results indicated that men showed higher levels of cyber-ostracism, while women scored higher levels of social anxiety. Cyber-ostracism was related with a higher social anxiety among university students, associated to Internet use. We discuss how this form of virtual ostracism continues to increase and how it affects students of higher education. We also discuss how Internet use may increase the risk of social anxiety in victims of cyber-ostracism. These findings have important implications for future prevention and intervention programs.

Keywords: social anxiety, social exclusion, social networking, cyber-ostracism, higher education

RESUMEN

El uso de las Tecnologías en la Relación, la Información y Comunicación (TRIC) ha cambiado la manera en que los estudiantes universitarios interactúan y se relacionan entre sí, dando lugar a experiencias tanto positivas como negativas, en las que han de enfrentarse a ciberconductas de riesgo. El ciberostracismo es una forma de exclusión social en el espacio virtual que conlleva sentimientos de ansiedad social y que puede darse en estudiantes universitarios, provocando consecuencias perniciosas. Sin embargo, aún no se ha explorado lo suficiente si este sentimiento puede relacionarse con un aumento del uso de Internet al percibir la exclusión online. Tomando este reto como foco, el objetivo de este trabajo es conocer la asociación entre el ciberostracismo y la ansiedad social, así como el posible efecto indirecto del uso de Internet. En el estudio participaron un total de 1605 estudiantes de diferentes universidades españolas, con edades comprendidas entre los 17 y 25 años ($M = 19.59$, $DT = 1.75$), siendo 66.3% mujeres, el 31.7% hombres y el 2% no indicó su género. Se utilizaron diferentes instrumentos: Cuestionario de Experiencias Relacionadas con Internet (CERI), Escala de Ansiedad Social para Adolescentes (SAS-A) y Escala de Experiencia de Ciberostracismo para Adolescentes. Los análisis estadísticos incluyeron la prueba t Student y el análisis de mediación con la macro PROCESS. Los resultados indicaron que los hombres mostraron mayores niveles de ciberostracismo, mientras que en ansiedad social puntuaron más alto las mujeres. El ciberostracismo se asoció con mayor ansiedad social entre estudiantes universitarios, mediado por el uso de Internet. Se discute cómo esta forma de ostracismo virtual continúa progresando y afectando a estudiantes de educación superior y cómo el uso de Internet puede aumentar el riesgo de ansiedad social en víctimas de ciberostracismo. Estos hallazgos tienen importantes implicaciones prácticas en futuros programas de prevención e intervención.

Palabras clave: ansiedad social, exclusión social, redes sociales, ciberostracismo, educación superior

INTRODUCTION

The university stage is an important and critical period for the personal and social development of students, but also a period of certain vulnerability and fragility (Lohner & Aprea, 2021). This stage is characterized by the constant search for well-being and is linked to the exploration of new social relationships (Silke et al., 2018). The bonds created among peers and the perception of belonging to a group are key in the state and psychological functioning of individuals (Eisenberger et al., 2003). In this sense, the high presence of Relationship, Information and Communication Technologies (IRCT) has changed the way people relate to each other. The use of Internet and social networks has become an essential tool in the lives of young university students (Valerio & Serna, 2018). However, although the use of Internet can help to have satisfying experiences during the connection, it can also generate challenges and difficulties in interpersonal relationships (Pyżalski, 2023). The management of social relationships through Internet can facilitate or generate exclusionary behaviors, in which the person can be ignored by others, as is the case of cyber-ostracism or online ostracism (Galbava et al., 2021).

Cyber-ostracism is a form of social exclusion in the virtual space (Williams & Nida, 2016). This cyber behavior can be manifest by a lack of social interaction, but also when people do not receive the expected or desired feedback during their connection through social networks or other online environments (Galbava et al., 2021). This phenomenon is manifested among users worldwide, including the young population in higher education, particularly during their first academic year (Smith et al., 2017). Some studies conducted on cyber-ostracism in young university students have not detected significant gender differences in that population (Abrams et al., 2011; Tang & Duan, 2021), unlike what it has been observed in adolescence, where levels of cyber-ostracism are higher in boys than in girls (Niu et al., 2018).

Cyber-ostracism is understood as an unpleasant social cyber-behavior, which negatively affects the mental health of those who suffer from it (Williams & Nida, 2016). A previous work has pointed out that any form of cyber-ostracism, even the most sporadic, is painful and it has consequences on victims. Moreover, it can affect their social connectedness as well as their mood (Galbava et al., 2021). Being excluded or ignored can produce feelings of anxiety, associated with the sensitivity of status loss (Azoulay & Gilboa-Schechtman, 2022), and with the individual's social well-being (Silke et al., 2018). Based on these investigations, it is expected that the exclusion and loneliness caused by cyber-ostracism may drive the search for social support in social networks to offset the impact of this type of cyber-behavior, thereby increasing the hours of Internet connection (O'Day & Gross, 2021), generating a greater social anxiety. Thus, the aim of this research is exploring the effects of this

type of cyber-behavior that undermines the well-being of those who are excluded, focusing on examining whether the abuse of time spent on Internet for reasons of cyber-ostracism may be associated with episodes of social anxiety in an educational stage, in which new networks and social bonds are being built.

CYBER-OSTRACISM AND SOCIAL ANXIETY IN UNIVERSITY STUDENTS

People, and especially young people, feel the need to be connected in different social networks (Giraldo-Luque & Fernández-Rovira, 2020). This need for connection with other people is harmful when they are socially excluded or ignored (Smith et al., 2021). A study carried out with neuroimaging measures showed that being excluded activated the same areas of the brain as those of physical pain. Interestingly, this effect was not a consequence of the rejection itself, but because the sense of belonging was affected (Eisenberger et al., 2003). According to Hogg's (2007) identity theory, this needs to belong makes the human being feel like a useful and active part of the group and creates affective bonds that generate positive attitudes towards the group and calm feelings of social anxiety and uncertainty (Videla et al., 2023). Therefore, people who are excluded from a group suffer both physical and psychologically when they are deprived of these connections (Wesselmann et al., 2022). The social pain caused by being excluded or ignored increases the negative affect, leading to feelings of anxiety in the individuals who suffer from it (Wolf et al., 2015).

Social anxiety is considered as the intense or persistent fear of being observed and judged negatively by others (National Institute of Mental Health, 2022). This disorder is associated with sensitivity to the loss of status (Azoulay & Gilboa-Schechtman, 2022). According to Lang's (1968) three-dimensional theory, social anxiety arises through a three-dimensional response system (cognitive, physiological and behavioral), extensible or valid to all other emotions. The first dimension of this system is related to the fear of being evaluated or judged by others. The second dimension, the physiological, can provoke moments of restlessness and anguish that can be accompanied by bodily symptoms. Meanwhile, the third dimension, behavioral, refers to the movements or actions performed by the individual when suffering social anxiety, both involuntarily (tics or stuttering) and voluntarily (e.g., alcohol or drug abuse, etc.) (Cano-Vindel et al., 2020). Several studies confirmed that this disorder occurs more frequently in women than in men, obtaining higher scores in adolescents and emerging youth (Hawes et al., 2020).

At the university environment, a stage in which new social networks are configured and in which the connection with many groups becomes an important element in their interpersonal relationships, cyber-ostracism is one of the risks that generates higher levels of social anxiety (Lin et al., 2017). The effect of social

exclusion on the mental health of young university students is increased by the characteristics of the online context, which allow the harm to be asynchronous, anonymous and with a lack of social cues, promoting that aggression can be illusory or unreal and can be continued in the imagination, increasing feelings of social anxiety (Wolf et al., 2015). However, most of the works with university population had focused on other forms of online mistreatment such as cyberbullying, which refers to different forms of violence through the screen, in addition to exclusion (Souza et al., 2022). In contrast, research in the university setting that focuses on this specific type of cyber-behavior is scarce and, moreover, the few studies conducted on cyber-ostracism used very specific samples. For instance, the study by Akçay and Kayis (2023), which was conducted with prospective teachers and at a single university. It is therefore necessary to continue exploring the effects of cyber-ostracism on the behavior and well-being of young university students using a large number of participants from different regions and different degrees, which would provide a deeper understanding of an underexplored phenomenon.

The mediating effect of Internet use among young people

It has been shown how Internet use impacts people's well-being (Paez et al., 2019). Nowadays, more and more young people are making use of the Internet and social networks, using it as their primary means of communication (Stockdale & Coyne, 2020). National studies indicate that young people between the ages of 16 and 24, with 99.7% in males and 99.8% in females make use of the Internet (Instituto Nacional de Estadística [INE], 2022). While the use of the Internet has facilitated interpersonal interactions, it has also generated the need to be continuously connected so as not to be left out of what is happening in the online world (Milan, 2018).

The high level of proficiency with digital technologies has caused an increase in young people's online hours, sometimes for the purpose of boosting social support seeking (O'Day & Gross, 2021). This appears to increase during the first academic year of university, when young people may be in an unstable and transitional period (Smith et al., 2017). According to Poon (2018), people experiencing social exclusion have a limited ability to control their impulses and may spend a large amount of their time surfing the web. In addition, social exclusion alters the way a person processes information, motivating them to change their behavior to seek acceptance among their peers (Kawamoto et al., 2015). The problems of exclusion and isolation suffered can induce the active search for social support through social networks, with the aim of compensating for their lack, which in turn translates into an increase in hours of Internet connection (O'Day & Gross, 2021) and its associated problems, such as social anxiety. Along these lines, some authors found that abusive

Internet use influences certain characteristics related to student well-being, such as social anxiety (Romero-Rodríguez et al., 2021). People with social anxiety find in Internet a refuge where they can find social support, thus exploring the mediating effect of problematic Internet use is one of the objectives of this study. Knowing the impact of cyber-ostracism on the use of the Internet in young university students will provide important clues to reduce the effects on the anxiety levels of those who are victims of this type of cyber-behavior.

Objectives and hypotheses of the study

The objectives of this study are (1) to analyze the relationship between cyber-ostracism and social anxiety and (2) to explore the mediation effect that Internet use has on the relationship between cyber-ostracism and social anxiety in university students.

To this end, the following hypotheses were proposed:

- (H1) There will be a relationship between cyber-ostracism and social anxiety. This hypothesis is based on previous findings focused on those who are socially excluded during their interactions may experience a combination of negative emotions, generating feelings of social anxiety (Akçay & Kayış, 2023).
- (H2) Internet use will have an indirect effect between cyber-ostracism and social anxiety, in accordance with previous studies that highlight that Internet use can generate a possible increase in stress, anxiety, and lack of communication and social interaction (Romero-Rodríguez et al., 2021).

METHOD

Participants

The present study used a non-probability convenience sampling (Singleton & Straits, 2004). A total of 1605 students from different Spanish universities participated in the study. There was a greater presence of women, with a representation of 66.3%, compared to 31.7% men and 2% who preferred not to indicate their gender. The age range of the students was between 17 and 25 years old, with a mean of 19.59 years ($SD = 1.75$). Regarding the educational branch of the degree, 57.8% of the students were from social and legal sciences, 12.2% from arts and humanities, 12.2% from health sciences, 6.7% from sciences and 11.1% from engineering and architecture.

Instruments

A series of sociodemographic questions were asked about gender, age and educational branch. In addition, the following scales were used:

Internet-Related Experiences Questionnaire (CERI), developed by Beranuy et al. (2009). This instrument consists of 10 items with Likert-type responses organized into four levels, ranging from *never* (1) to *quite a lot* (4). The questionnaire covers two factors: intrapersonal conflicts (e.g., «when you are not connected to Internet, do you feel altered or worried?») and interpersonal conflicts (e.g., «do you find it easier or more comfortable to relate to people through Internet than in person?»). This questionnaire obtained good reliability indices with the sample of this study ($\alpha = .74$).

Social Anxiety Scale for Adolescents (SAS-A), adapted by Jiménez et al. (2013) from the original version (La Greca & López, 1988). The scale contained 18 items and was organized into five levels, ranging from *never* (1) to *always* (5). SAS-A measures the same three factors as the original: fear of negative evaluation (e.g., «I worry about what others think of me»), anxiety and social avoidance in new situations (e.g., «I am nervous about talking to people of my age whom I do not know well»), and anxiety and social avoidance in general (e.g., «I find it difficult to ask others to do things with me»). This questionnaire presented good reliability with the sample of this study ($\alpha = .95$).

Cyber-ostracism Experience Scale for Adolescents (Niu et al., 2018). The scale consists of 14 items, whose response options range from *never* (1) to *always* (5). The scale has three dimensions: cyber-ostracism in personal chat (e.g., «I get no response when I try to chat with someone online»), cyber-ostracism in group chat (e.g., «few or no members respond when I start a small conversation in an online group»), and cyber-ostracism in personal webspace (e.g., «I get no response after sending comments to others in personal webspace»). The reliability of the scale for the study sample was optimal ($\alpha = .92$).

Design and procedure

This is an *ex post facto* retrospective design through a cross-sectional study. First, different teachers from several Spanish universities were contacted and provided with information on the aim of the study and asked for their possible collaboration. Subsequently, the questionnaire, together with the protocol for its administration, was sent to the students. The online questionnaire was carried out using Google Forms. On the first page, the consent of the university students was requested in order to carry out the survey. It indicated that the questionnaire complied with the

ethical principles of the Declaration of Helsinki on anonymity, confidentiality and voluntariness. The approximate duration of the survey was 10 to 15 minutes.

Date analysis

After data collection, the information was processed using the IBM SPSS Statistics statistical program, version 24 for Windows. Descriptive analyses, Student's *t*-test for gender differences and bivariate correlations were performed to test the association between variables. Subsequently, the macro-PROCESS V.4.2 or extension for SPSS was used to standardize all the variables in order to be able to make comparisons between them, both for direct and indirect effects.

For hypotheses 1 and 2, model 4 of Hayes (2013) was used to assess the effect of Internet use on the relationship between cyber-ostracism (predictor variable) and social anxiety (dependent variable) was evaluated. Both gender and age were used as covariates. The indirect effects were interfered by the Bootstrapping method, since this method considers the distribution and sample size of the empirical data themselves, considering an interval as significant if it does not include zero. Finally, the mediation effect was calculated through the ratio between the indirect effect and the total (Wen & Fan, 2015).

RESULTS

Descriptive results

Table 1 shows the means, standard deviations, Student's *t*-test and effect size for the three study variables. The data indicated that there were differences between men and women in cyber-ostracism, with a higher mean in men, and in social anxiety with higher scores in women. There were no significant differences in Internet use (see Table 1).

Table 1*Means, standard deviations, differences by gender and effect size for all study variables*

	Total		Men		Women		t	d
	M	SD	M	SD	M	SD		
Cyber-ostracism	1.70	.60	1.78	.60	1.67	.59	-3.41***	.19
Social Anxiety	2.34	.86	2.16	.76	2.41	.88	5.51***	.30
Internet use	2.32	.48	2.34	.47	2.30	.49	-1.34	.08

Note. M = means; SD = standard deviation; t = value of Student's t; d = Cohen's d; *** $p < .001$.

Correlational results showed a significant and positive association in all variables through Pearson's correlation. The values were: $r = .35$ in the relationship between cyber-ostracism and Internet use; $r = .40$ between social anxiety and Internet use; and $r = .44$ between cyber-ostracism and social anxiety.

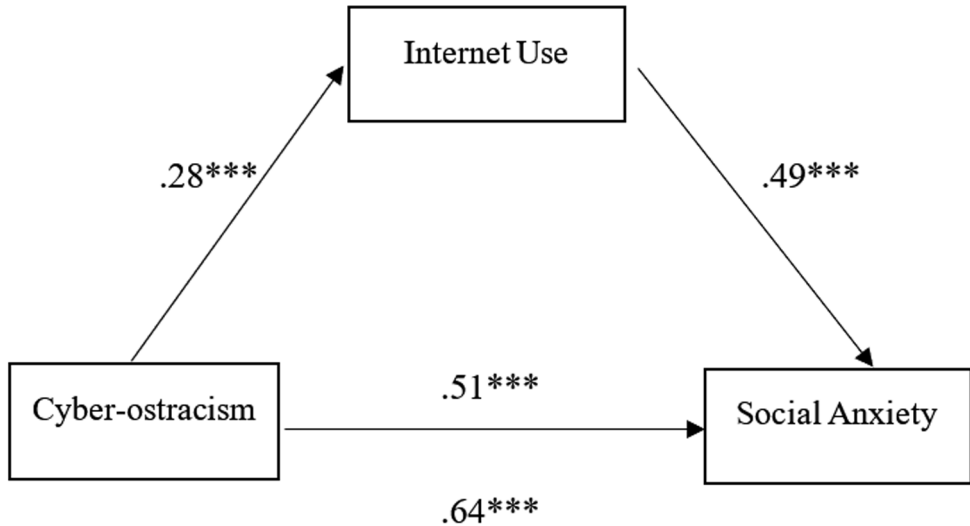
Mediation analysis

Mediation analyses were conducted using the model 4 of Hayes (2013). The effect of cyber-ostracism (predictor variable) on social anxiety (dependent variable), mediated by Internet use, was shown to be significant ($F_{(4, 1600)} = 153.734$; $R^2 = .28$; $p < .001$). In the first step, it was identified that there was a direct relationship of cyber-ostracism on social anxiety, which was significant ($\beta = .51$, $t = 15.54$, $p < .001$). In the second step, a direct and positive relationship of cyber-ostracism on Internet use was found ($\beta = .28$, $t = 14.82$, $p < .001$). Thirdly, a direct relationship of Internet use on social anxiety was observed ($\beta = .49$, $t = 12.22$, $p < .001$). Lastly, the total effect of cyber-ostracism on social anxiety was found ($\beta = .64$, $t = 20.19$, $p < .001$).

To evaluate the indirect effect and the Confidence Intervals (CI), the bootstrap procedure was used. A positive indirect effect relationship of cyber-ostracism on social anxiety was shown through the use of the Internet, this effect being significant ($\beta = 0.14$, 95% CI = [0.11, 0.17]). The mediation of Internet use accounted for 21.45% of the total effect. Figure 1 shows the significance in each of the pathways of the model.

Figure 1

Mediation effect of Internet use on the relationship between cyber-ostracism and social anxiety



Note. *** $p < .001$.

DISCUSSION AND CONCLUSIONS

The purpose of the present study was to determine the impact of cyber-ostracism in young university students. First, it was analyzed whether social exclusion through virtual space could be related to social anxiety in higher education students. Subsequently, it was examined whether the increased use of Internet could have a mediating effect on this relationship. In this sense, this type of online behaviors, which promote the exclusion of certain people from the group, allude to an unpleasant social phenomenon that negatively affects the feeling of belonging during social relationships and whose impact has repercussions on people's well-being and mental health (Galbava et al., 2021). Previous studies confirmed the relationship of this online behavior with social anxiety problems in university trainees, specifically in future teachers (Akçay & Kayış, 2023). But there was a need to explore this association with a broader population of students and from different university degrees, as well as to know the possible mediating variables that can help to understand this connection between online exclusion and social anxiety.

Descriptive analyses indicated significant differences in social anxiety, being higher in women than in men, in line with the results obtained in previous studies (Hawes et al., 2020). In fact, the National Institute of Mental Health (2022) indicates that the gender difference is more pronounced in adolescents and young adults, in agreement with the ages of the sample in this study. The analyses of the study also found gender differences in cyber-ostracism, being higher in males than in females, in contrast to the results obtained in other studies, in which no significant gender differences were found (Tang & Duan, 2021). These discrepancies may be since previous studies were conducted with participants from different countries, so that the cultural component could influence the gender differences for this type of online exclusion. In the present study the effect sizes were weak, so it seems that gender is not an important differentiating variable in cyber-ostracism, at least with higher education students. No significant gender differences were found in Internet use. Despite its massive use, especially among university students, this study agrees with previous studies in finding no gender differences at this educational stage (Ramírez et al., 2020).

Hypothesis 1 was confirmed. The results obtained indicated a positive and significant relationship between cyber-ostracism and social anxiety. These data showed that university students' social anxiety may be related to their perceived cyber-ostracism, causing negative feelings of discomfort and fear of being judged or evaluated, as found in a recent study (Akçay & Kayış, 2023). This may be because, when these relationships are affected by rejecting behaviors such as cyber-ostracism, it can cause students to feel a sense of loss of social connectedness (Azoulay & Gilboa-Schechtman, 2022) and generate feelings of social anxiety that damages their mental health and interferes in different areas of their lives.

Hypothesis 2 was also confirmed. The results obtained demonstrated a positive relationship of Internet use as a mediator between cyber-ostracism and social anxiety. Previous research had evidenced that an interpersonal experience of exclusion could cause an increase in the hours spent online (Poon, 2018), possibly to seek new relationships or avoid feeling discomfort. A previous work indicated that there was a positive relationship between Internet use and social anxiety (Romero-Rodríguez et al., 2021). Thus, the data from this study add valuable information on how the experience of social exclusion experienced by young university students who suffer cyber-ostracism can drive them to seek new friendships or to try to divert their attention from this aversive situation, leading to an increase in Internet use, which can generate greater social anxiety. Therefore, Internet use increases the relationship between online ostracism and social anxiety in college students.

An interesting aspect that emerges from this hypothesis is the paradox of Internet use in the search for social support and its impact on emotional well-being. While Internet provides a platform for social interaction and bonding, it has also

been shown that it can contribute to social exclusion and increased anxiety. This illustrates how digital technology can have both positive and negative effects on people's lives and highlights the importance of a balanced and conscious approach to Internet use in modern society.

The present study has some limitations that would be important to highlight for future studies. A longitudinal study, rather than a cross-sectional one, would allow us to know the causal effects of the variables. For example, information could be collected during different time intervals, from the first to the fourth year of university, giving special attention during the first academic year, due to the social vulnerability that young people suffer during that year (Smith et al., 2017), thus exploring the evolution during the different university courses. Also, it is proposed to extend the sample to other countries and to be able to carry out cross-cultural studies that allow comparing the influence of cultural variables. Likewise, it would be interesting to use other qualitative instruments (interviews, observation, focus groups, etc.) to understand the decision-making process in the face of suffering from this type of cyber-behavior.

In summary, the results of this study offer a valuable contribution to knowledge about the impact of cyber-ostracism on the social anxiety of young university students, with Internet use as a mediating effect. The results obtained reveal a positive and significant correlation between these variables. Cyber-ostracism leads to a greater social anxiety among university students, mediated using the Internet. This is why the present study highlights the need to expand research on cyber-ostracism beyond the adolescent stage. It is important to understand how this form of virtual ostracism continues to progress during their transition to higher education and the role played by the use of Internet, which paradoxically can be used as a way to try to resolve the online exclusion they feel through cyberspace and instead become a way to increase their social anxiety (Pyżalski, 2023).

Following these findings, it is suggested that universities and other educational institutions can take steps to address this emerging issue. The implementation of awareness and sensitization programs can play a key role in the prevention and mitigation of cyber-ostracism and social anxiety among students. These programs could include educational activities for teacher training and support resources for students experiencing cyber-ostracism and social anxiety. It would also be important to work on the use of Internet by students who are being excluded by their peers in intervention programs or through the psychological care units of the universities themselves, since misuse can lead to higher levels of social anxiety. But beyond working to reduce online social exclusion at the university environment, universities should encourage and promote, through their policies and plans, the good coexistence of students, promoting an inclusive, sustainable and peaceful education. Social support and the development of strong and consolidated social

relationships have important benefits for university students, not only in the academic field but also in well-being and mental health.

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