Social Adaptation and Its Association with Loneliness and Anxiety: A Pre–Post Evaluation of the Target Friendship Program for International Students*

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Article Information	ABSTRACT
	The social adaptation of international students is a critical responsibility for universities, which also cater to the international community. A systems approach, together with management functions such as planning, organizing, directing, coordinating, and controlling, may provide a valuable framework to address this issue. One of the areas where students experience significant challenges is during their initial enrolment in college, particularly in relation to social adjustment. This study examined the impact of the Target Friendship Program, a structured peer-mentoring and support initiative, on international students' experiences of loneliness and anxiety. An explanatory sequential mixed-methods design was employed: 60 students completed pre- and post-program assessments using the Beck Anxiety Inventory and the UCLA Loneliness Scale within a six-month pre-post framework, followed by in-depth interviews with 20 students randomly selected among volunteers. Data were collected at baseline and immediately after the program ended. Quantitative analyses indicated that participation in the program was associated with a significantly lower loneliness score, while no significant change was observed in anxiety levels. Interview data revealed that personal life circumstances had a stronger influence on students' anxiety than university experiences. These findings highlight that structured peer-based adaptation programs are associated with alleviating loneliness, though their impact on anxiety may be limited. The Target Friendship Program provides a practical model that can inform future research on peer-mentoring interventions, longitudinal evaluations of social adaptation, and the development of culturally sensitive tools for assessing well-being in international student populations. **Keywords:** Education management, international students, social adaptation, system approach, mentorship

1. INTRODUCTION

University life offers a distinctive setting for new students, marking a unique period and phase in which they prepare for adulthood. Consequently, while it differs among individuals, the very first year of university is a significant and challenging experience, encompassing academic, psychological, social, and emotional dimensions for each student embarking on this

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journey (Martin, 2000; Tross et al., 2000). International students, defined as those whose previous education was at home and who are currently studying abroad, experience these difficulties to an even greater extent (OECD, 2019). Under these circumstances, in addition to the general problems faced by young people of their age around the world, the disadvantage of coming to a new university from a different country or culture, and especially from regions of socio-economic and political turmoil, plays a role in heightening this effect and process.

The first year is regarded as a transitional period during which students adjust to the academic and social environment. Research indicates that it is critical for new students to interact with peers, build relationships, and utilize institutional support mechanisms to ensure the success of both students and the institution (Baker & Nisenbaum, 1979; Baker & Siryk, 1983; Baker & Siryk, 1999; Gerdes & Mallininckrodt, 1994; Kaczmarek et al., 1990).

Adaptation is also emphasized in Türkiye at the policy level as a means of supporting social cohesion while enabling individuals to preserve their identity (Republic of Turkey, Ministry of Interior, Directorate General of Migration Management, 2022). At the same time, recent research and global statistics show that international students are at significantly higher risk of experiencing loneliness, anxiety, and social isolation compared to domestic peers, particularly during their first year of university (Forbes-Mewett & Sawyer, 2016; Yuan et al., 2024; Xiong et al., 2025). According to the Council of Higher Education (CoHE), the number of international students in Türkiye exceeded 300,000 in 2022 (CoHE, 2022). While this growth is promising in terms of internationalization efforts, it also brings with it increased psychosocial demands, as many international students face challenges related to loneliness, social isolation, and adjustment-related anxiety during the early stages of their academic journey. National surveys conducted by CoHE (2022) indicate that over half of international students in Türkiye struggle with social integration and emotional well-being. International data show similar patterns: over 40% of international students in Australia report moderate to severe anxiety symptoms (Forbes-Mewett & Sawyer, 2016), and nearly two-thirds of international students in the United States experience high levels of loneliness due to limited social networks (Girmay, 2019). In the Turkish context, over 60% of university students report significant feelings of loneliness (Ozdemir & Tuncay, 2008). These findings highlight that loneliness and anxiety are widespread issues that can undermine both psychological well-being and academic persistence (Pozza Ellwanger et al., 2024). Thus, adaptation policies must be considered not only in terms of cultural integration but also as mechanisms to prevent loneliness and anxiety.

Social support has been identified as a critical mediating factor in students' psychological adjustment (Yıldırım & Tanrıverdi, 2021). Peer mentoring and community-based engagement programs have the potential to reduce feelings of loneliness and enhance social adaptation. Such structured interventions can provide international students with stronger support networks, opportunities for interaction, and guidance in navigating academic and social challenges.

In this context, Üsküdar University provides an illustrative case, with approximately 4,000 international students (25% of the total student body), including 500 to 1,000 new enrollees each year. To support their adaptation, the Target Friendship Program (TFP) was developed as a peer-based, multi-component initiative. The program encourages participation in academic, intellectual, and social activities, helping students overcome adjustment challenges while promoting both academic success and social integration. Despite the growing number of international students in Türkiye, limited research has examined the effectiveness of structured peer support interventions in this context.

This study aims to address this gap by evaluating the impact of the TFP on loneliness and anxiety among international students. The contribution of this study lies in offering evidence-based insights into how universities can design and implement support systems to improve the psychosocial adjustment of international students during their first year.

1.1. Theoretical Framework and Literature Review

1.1.1. Social integration and systems theories

Theories of social integration provide a valuable framework for understanding how individuals or groups adapt to the norms, values, and cultural expectations of a host society. Successful integration results from the mutual interaction between individuals and the systems they encounter, reflecting both personal and environmental dimensions of adaptation (Sam & Berry, 2010).

John W. Berry's (1997) Acculturation Model is a crucial theoretical framework for comprehending the social integration processes involved in adapting to living beyond one's native country by outlining four strategies: assimilation, separation, marginalization, and integration (Ranabahu & De Silva, 2024; Schmitz & Schmitz, 2022; Smith & Khawaja, 2011). Assimilation refers to adopting the new culture while abandoning one's original identity, whereas separation describes maintaining one's own culture without engaging with the host society. Marginalization occurs when individuals lose connection with both their heritage and the host culture. Integration, by contrast, allows individuals to maintain their cultural identity while actively engaging with the new society. Among these, the integration strategy is considered the most adaptive in the context of international students, as it supports both psychological and sociocultural adaptation competence (Ward & Kennedy, 1993; Zhou & Todman, 2009; Ward, 2021; Lai et al., 2023; Gebregergis, 2025; Pointon-Haas et al., 2023).

The process of temporary cultural adaptation can also be evaluated through psychological and sociocultural adaptation frameworks, which assess the internal, such as emotional and cognitive, and external, such as behavioral and interactional, aspects of adjustment, respectively (Ward & Kennedy, 1999). Psychological adaptation relates to mental health and emotional well-being, while sociocultural adaptation involves the ability to fit into the new social and cultural environment effectively (Masgoret & Ward, 2006; Ward & Kennedy, 1993).

The literature emphasizes that effective social interaction with host community members enhances sociocultural adaptation and self-esteem in minority populations (Masgoret & Ward, 2006). It has also been argued that students who successfully adjust to their educational environment are more resilient to the psychological challenges of cultural transition (Uluocak, 2009; Lu et al., 2024). These findings underline the importance of the broader institutional and environmental context in supporting individual adaptation.

Another relevant theoretical perspective is systems theory, which was originally developed by Ludwig von Bertalanffy in the 1950s. This theory was later applied to organizational structures, offering a theoretical lens through which institutions are viewed as dynamic and adaptive entities. Duncan (1972), referencing J.G. Miller's Organizations as Living Systems, emphasized that institutions, much like living organisms, must maintain their functions through continuous interaction with both their subsystems and suprasystems. According to this approach, a system survives and evolves through the ongoing exchange of energy, information, and feedback with its environment and components. Each subsystem is both a part of the larger system and in constant interaction with other subsystems; therefore, a change in one part may influence the system as a whole (Daft, 1997).

In conclusion, successful sociocultural adaptation is shaped not only by individual psychological resilience but also by the structural responsiveness of institutions. As highlighted in Berry's acculturation framework, the integration strategy, which promotes maintaining one's cultural identity while engaging with the host society, yields the most adaptive outcomes. Likewise, social integration theories emphasize that positive interactions with members of the host community enhance sociocultural competence and self-esteem. When viewed through the lens of systems theory, these insights underscore the necessity for universities to function as adaptive systems that support their subsystems, namely, international students, through coordinated structures, effective communication, and resource allocation. Thus, fostering integration and facilitating meaningful social interactions within a supportive institutional system are crucial for enhancing international students' adjustment processes.

1.1.2. The Systems Approach in Managing Social Adaptation in Higher Education

A system is a whole formed by interrelated elements that work together to achieve a specific purpose (Von Bertalanffy, 1968). The General Systems Theory, developed by Von Bertalanffy (1968), conceptualizes systems as more than the sum of their parts and has found broad application in organizational sciences and management. Building on this, open systems are structures that constantly interact with their environment, processing inputs and generating outputs (Von Bertalanffy, 1972; Katz & Kahn, 1978). Schools, as open systems, maintain their existence by adapting to environmental changes and sustaining a dynamic equilibrium. From a management perspective, the open systems approach necessitates considering both internal processes and external environmental factors. For instance, effective management in schools requires balancing internal elements, such as educational programs and mentor-mentee relationships, with external factors, including societal influences, policies, and resources. The systems approach enhances the capacity of educational institutions to adapt to changes and achieve sustainability (Senge, 1990). From a management perspective, this approach emphasizes the holistic management of inputs, processes, and outputs. Furthermore, the principle of dynamic equilibrium strengthens the ability of schools to respond to changes (Hoy & Miskel, 2012).

Given the dynamic nature of open systems in educational institutions, effective management becomes essential to coordinate internal and external elements and maintain organizational balance. Management involves defining goals and objectives, formulating plans to achieve them, organizing necessary resources, coordinating interactions between internal and external elements of the system, and implementing controls throughout each stage of the process making adjustments based on ongoing feedback (Sucu, 2000). Henri Fayol (1916) stated that the functions of management are to plan, direct, organize, coordinate, and control. Carroll (1999) emphasizes the importance of university management in achieving its goals and fostering social responsibility among international students. Universities, like any other business or institution, must manage their dynamic structure and establish appropriate organizations to achieve their objectives. Both administrative and academic departments should handle student relations and adaptation separately, with a focus on relationships with peers, academic and administrative units, problem resolution, guidance, and activities to facilitate socialization. Knight (1994) suggests four different approaches to internationalization for institutions: the process approach, mobility approach, competence approach, and organizational approach. The process approach focuses on embedding international dimensions into institutional policies, strategies, and activities; the mobility approach emphasizes the physical movement of students, faculty, and programs across borders; and the competence approach seeks to enhance the global and intercultural competencies of students and staff. The organizational approach, on the other hand, concentrates on developing a supportive institutional culture for internationalization, including structural adjustments and internal coordination mechanisms. Given the institutional and systemic focus of this study, the organizational approach provides the most relevant framework for understanding how universities can effectively support social adaptation processes (Knight, 1994; de Wit, 2002; Brandenburg & Federkeil, 2007).

In line with the open systems perspective, universities do not operate in isolation; rather, they are embedded in broader social and environmental ecosystems. Therefore, their sustainability depends not only on internal management but also on their responsiveness to external responsibilities. Viewed as open systems, universities can be understood as continuously exchanging knowledge, resources, and services with their environment, which in turn highlights the relevance of their social responsibilities. Multinational institutions play a crucial role in achieving sound social development, contributing to a better society, world, and environment (UNCTAD, 1999). Universities, like other institutions, are expected to pay attention to their environmental and social activities to maintain their sustainability. By responding to the needs and objectives of the international community within the framework of social responsibility, universities can contribute to a better society and environment.

1.1.3. The Effects of Adaptation Studies on The Psychological State of Students

The psychological and social conditions of new university students are closely related to their adaptation to university life (Tross et al., 2000). While many students manage this transition smoothly, others may experience emotional and social challenges that affect their adjustment. In particular, some students may be more vulnerable to perceived or actual exclusion in their new environment. Behaviors such as contempt, ridicule, inappropriate language, negative body language, and symbolic violence (Bourdieu, 2015) may not always be intended as exclusionary but can still be perceived as marginalizing, especially by students with limited language proficiency or those lacking a strong support network. Even in cases where explicit exclusion is absent, the existence of a language barrier may lead certain students to feel excluded or isolated, complicating their psychological adaptation (Sawir et al., 2008; Yeh & Inose, 2003).

The satisfaction of international students studying in another country does not only depend on the academic education they receive but also on their ability to express potential dissatisfaction, which may be hindered by the fear of exclusion in an already constraining environment (Sawir et al., 2008; Özoğlu et al., 2012; Snoubar, 2015). Language, culture, oppression, discrimination, and some psychological conditions affect the psychological and academic adaptation processes of international students at universities (Özoğlu et al., 2012; Snoubar, 2015). One of the issues that international students pay attention to is the social and economic conditions of the country (Radmard, 2017; Ger et al., 2017). Therefore, they should be included in the integration programs that are developed jointly with non-university institutions in the university follow-up, and their problems should be shared with the relevant units in the country (Crisp & Cruz, 2009).

The start of higher education marks a critical stage in the transition to adulthood and often poses additional challenges for international students, who may face unfamiliar academic systems, cultural norms, and social expectations. These factors can lead to heightened levels of anxiety, fear, and adjustment difficulties that may increase the risk of anxiety disorders (China et al., 2020). Mental health concerns among university students, particularly among international populations, are increasingly recognized as a global public health issue (WHO, 2022; Çakmak & Konca, 2019; Xiong et al., 2025). Anxiety, commonly experienced by international students during adaptation, involves physical symptoms such as restlessness, worrisome thoughts, and elevated blood pressure, as well as generalized fear in response to perceived threats (Bouras & Holt, 2007; American Psychiatric Association, 2013).

Among international students, anxiety is frequently reported as part of a range of adjustment-related difficulties and may resemble symptoms observed in broader anxiety disorders such as post-traumatic stress disorder, panic disorder, or social anxiety disorder (Smith & Khawaja, 2011). These symptoms can affect daily life and are often difficult to control, making anxiety a central indicator of psychological distress. Effective recognition and management of anxiety are therefore critical components of maintaining psychological well-being. Poor mental health among international students can result from a complex interplay of biopsychosocial factors, including academic stress (Misra & Castillo, 2004), cultural displacement, and limited access to support systems. One particularly salient psychosocial factor is loneliness, which has gained increased attention in recent literature as both a cause and consequence of emotional distress in cross-cultural educational contexts (Wang et al., 2018). Loneliness is known as an emotional state in which the individual is aware of the feeling of being separated from others, as well as an ambiguous experience of unmet social needs (Copel, 1988). Existential loneliness, psychosocial loneliness, and pathological loneliness are three main types of loneliness. Existential loneliness is universally felt and not related to loss of objects or close relationships. Pathological loneliness is linked to dysfunctional cognitions and emotional states experienced by severely disturbed individuals (Dale et al., 1989). In this context, psychosocial loneliness is usually the result of a change in status or temporary separation (Carr & Schellenbach, 1993). In the context of the study, psychosocial loneliness is characterized by the absence of social networks or a sense of community; it is also classified as emotional loneliness, which is characterized by the absence of close relationships (Perlman & Peplau, 1981). Loneliness has been identified as a factor that correlates negatively with self-esteem and positively with depressive tendencies (Diehl et al., 2018), and a positive relationship between anxiety and loneliness has also been established in student populations (Richardson et al., 2017). Chronic loneliness has further been associated with significantly lower social skills and social and academic adjustment than those who are not chronically lonely (Ouellet & Joshi, 1986; Roscoe & Skomski, 1989).

Students' transition to a new academic environment is shaped by a complex interplay of developmental opportunities and psychosocial stressors. While higher education settings can foster personal growth and social integration, they may also expose students to new academic demands and relational challenges that increase stress levels (Friedlander et al., 2007; Leong et al.,

1997). In this context, social support becomes a vital factor in facilitating adaptation, particularly during the early stages of university life. Grant-Vallone et al. (2003) highlight the role of social support in helping students navigate academic demands and maintain psychological well-being. Upon entry, students may encounter stressful interpersonal, social, and academic conditions, which can potentially lead to difficulties in social adjustment. Especially for first-year students, such challenges may heighten susceptibility to symptoms of anxiety and depression. Successful adaptation is therefore considered essential not only to academic persistence but also to psychological resilience. The process of adapting to university life requires multidimensional support, involving psychological and social resources provided by instructors, peers, administrative staff, and institutional frameworks. These components are expected to function in coordination to prevent emerging problems and to promote holistic development through a well-structured support system.

Social support is crucial in implementing integrated programs, involving local students, and conducting activities in multiple languages. Support offices, mentoring programs, orientation programs, information sessions, meetings, and social events contribute to a positive experience for new students. The mentoring program is another structure to improve university students' adaptation. Recent meta-analysis research has shown that mentoring programs can reduce mentees' stress and tension (Eby et al., 2008) and qualitative findings during the COVID-19 pandemic further highlight that peer support programs can enhance social and emotional well-being among postgraduate students (Parmar et al., 2025). According to the research findings of Jacobi's (1991) study, there are three main approaches to mentoring: the first is the approach of contributing to the person's development by contacting, supporting, and guiding individuals through various mentoring and social activities; the second is professional and career-oriented mentoring, which includes being a role model and providing psychological support; and the third is a reciprocal, personal mentoring relationship. These approaches can also be adapted to online settings as part of technological developments (Crisp & Cruz, 2009). In this context, peer mentoring widely practiced in universities can be considered part of the developmental approach. It refers to a structured support network where a more experienced student (mentor) in the same department guides a less experienced student (mentee) in their academic, social, and personal adaptation (Dorsey & Baker, 2004; Botma et al., 2013; Ellard et al., 2023; Ansari Lari et al., 2025). By fostering a sense of belonging and reducing perceived isolation, peer mentoring specifically addresses psychosocial loneliness, which is characterized by the lack of social networks or community ties.

Mentoring programs have been shown to offer several benefits for mentees, including enhanced academic adjustment, reduced stress, increased motivation, and emotional well-being (Parmar et al., 2025; Eby et al., 2008; Jacobi, 1991). In addition to these well-documented positive outcomes for mentees, mentoring also creates opportunities for mutual growth through the relationship established between mentor and mentee. However, there is still a paucity of literature examining whether the mental health benefits of mentoring have implications for the mentors themselves. It is therefore important to consider the perspective of the mentor when designing effective mentoring programs (Allen, 2007; Ragins & Scandura, 1999). Mentors and mentees share mental health benefits, but studies have tended to focus on mentees and a wider range of research and theory, leaving limited evidence of the positive impact of mentoring practice on mentors' mental health (Allen et al., 2008). Social adjustment and other similar student support practices increase the sense of belonging to the university. The sense of belonging to the university is an important factor for both the student and the university. According to the research, belonging is directly proportional to the student's attendance at the university (Gloria et al., 2005; Hausmann et al., 2007). According to Astin (1993), involvement and integration into campus life is achieved through peers, lectures, and academic and social activities (cited in Tross et al., 2000). Therefore, research in these areas should be conducted in higher education institutions.

In summary, the literature indicates that international students are especially vulnerable to psychosocial difficulties such as loneliness and anxiety during the initial phase of higher education. Theoretical perspectives emphasize that successful adaptation is shaped not only by individual coping capacities but also by the responsiveness of institutional structures. Previous studies have demonstrated that multiple biopsychosocial factors ranging from academic stress and cultural displacement to limited social support contribute to the risk of psychological distress. Within this body of research, loneliness has emerged as a particularly salient factor, closely associated with diminished well-being and academic adjustment. Despite these findings, structured peer support and mentoring programs remain underexplored as institutional interventions, especially within the Turkish higher education context.

Based on the theoretical framework and prior research outlined above, this study aims to examine the impact of the TFP, a structured peer-mentoring and support initiative, on international students' emotional well-being by testing two hypotheses.

- **H1:** International students' loneliness level is expected to be lower after participating in the TFP.
- **H2:** International students' anxiety level is expected to be lower participating in the TFP.

2. METHODOLOGY

Using the theoretical background on social adaptation and the system approach given above, the methodology of the study is designed to analyze international students' adaptation through the integration technique derived from cultural adaptation theories and the open systems approach from management and organizational theories, emphasizing adaptation challenges. As a specific process, the study implements TFP to decrease the loneliness and anxiety of international students.

The study's methodology has five primary components: project design, data collecting, data analysis, and results and discussion of research implications.

2.1. Procedure

The TFP approach aims to strengthen students' social bonds and provide holistic support by combining responsibility and motivation in a friendly environment (Tarhan, 2022). Based on this approach, the TFP was developed as a multi-component, highly interactive initiative designed to facilitate the adaptation of international students, with students actively contributing at every stage. The program provides structured peer support, encourages participation in intellectual and social activities, helps students overcome challenges, and enhances their academic success. Its components include mentoring, orientation, social events, and ongoing support.

This research is based on administrative activities to ensure social cohesion among international students. As a project plan, an appropriate organizational structure was created, and adequate resources have been allocated to manage this organization and the implementation. In this structure, when the student (mentee) encounters a problem or has a request, he/she must visit the relevant academic (faculty secretary, advisor, or academic or cultural representative) or administrative units to evaluate the actual problem. If there are problems that cannot be solved at the first level, the mentors, and leaders of the Target Friendship Team (TFTeam) will first help the students. If the problem cannot be resolved at this level, it is escalated to the Solution Center, which contacts the relevant departments and management to find a solution. Every petition sent to the Solution Centre is evaluated by a committee of top managers. In addition, many activities and projects are planned as part of the TFP to bring students together, develop friendships between them, and contribute to their integration. Figure 1 illustrates the structure of mentoring in this program. A loneliness and anxiety questionnaire was used at the beginning and end of the mentoring phase to demonstrate the benefits of the program. Throughout the process, the project plan and applications were monitored, and problems were resolved with corrective and preventive actions when necessary. This research is conducted within the framework of TFP. This comparative study could provide a solid foundation for practical and student-based projects at higher education institutions, as it is part of an ongoing project implemented at an international university with an established system. The Üsküdar University's Ethics Committee approved the research on 23.02.2023 under decision number 61351342/February 2023-11.
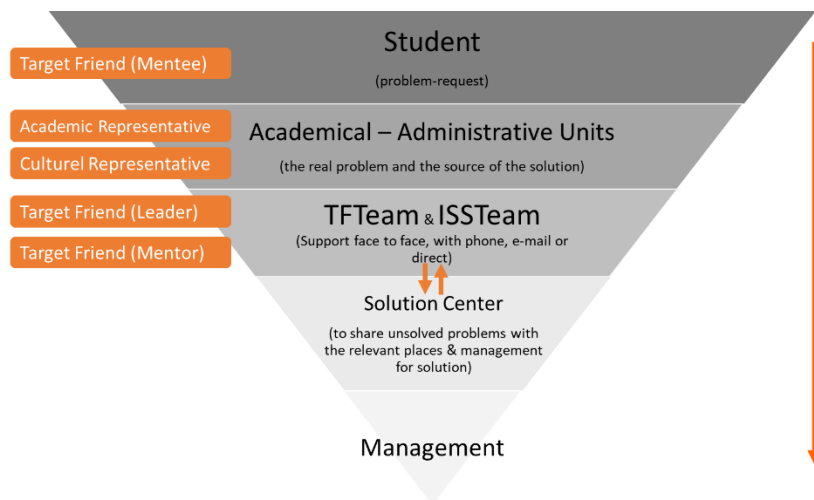

Figure 1. Solution Diagram of the International Student's Problem/Request for the Organizational Structure of Mentoring in the Target Friendship Program

2.2. Scope and Limitations of the Study

The research covers the first six-month pilot study period of the TFP for the academic year 2021–2022. All new international students were automatically enrolled in the program, which aims to contribute to social adaptation. However, there are 90 students who actively participate in the training and activities of the program and benefit from the support services. Therefore, the population of the study consists of these 90 students. For this reason, this group was invited to participate in the study. There were 60 students who participated in both the pre-test and the post-test of the research, and 58 students completed all the questions thoroughly. The analysis was carried out on these 58 data points.

2.3. Method

The study investigated the impact of the TFP, a structured peer-mentoring and support initiative designed to facilitate international students' first-year adaptation, on loneliness and anxiety levels using a one-group pretest–posttest quasi-experimental design. This design allowed us to directly test our hypotheses regarding the expected reduction in loneliness (H1) and anxiety (H2) following participation in the program. Although the main method of the study was a questionnaire, we also

conducted semi-structured face-to-face interviews with 20 students who were randomly selected among those who volunteered to participate as part of the planned mixed-methods design. A sample size of 20 was chosen because it was sufficient to capture diverse perspectives while remaining feasible within the scope of the pilot project. Each interview lasted approximately 20–30 minutes and was conducted at the International Student Office, focusing on students' perceptions of the program's benefits and the factors influencing their experiences of loneliness and anxiety. These interviews sought to investigate students' perceptions of the program's benefits and to provide qualitative insights to complement the quantitative findings. In the conclusion, we interpreted the information from the face-to-face interview.

2.4. Universe and sample

This study was conducted with a small group within the framework of the TFP, and subjective sampling was used. The population of the study consists of 350 students who participated in the program during the pilot study period (2021-2022) of the university's TFP. Participation in the research component was voluntary, and the data were collected from 60 international students participating in the TFP using the Beck Anxiety Inventory and the UCLA Loneliness Scale at baseline and immediately after the six-month intervention.

A total of 58 international students voluntarily participated in the study. Of these, 36 were male (62.1%) and 22 were female (37.9%). The mean age was 22.63 years (SD = 4.2; range 18–45). Most participants were single (95.3%) and enrolled in undergraduate programs (90.7%), while 4 participants (9.3%) were graduate students. Detailed demographic information is presented in Table 1.

Table 1.
Demographic Information of Participants

Characteristics		N	%
Gender	Male	36	62.1
	Female	22	37.9
Age *(Mean ± SD)*	22.63±4.2		
Marital Status	Single	41	95.3
	Married	2	4.7
Education	Bachelors	39	90.7
	Masters	4	9.3

Abbreviations: N: Sample, SD: Standard Deviation

2.5. Data Collection

The study used the Beck Anxiety Inventory, the University of California Los Angeles Loneliness Scale, and a short researcher-designed information request form as data collection methods. These scales were administered to the students as a pre-test before the start of the adaptation program and again immediately after the six-month program ended to evaluate changes in loneliness and anxiety. After students completed their university registration and visited the International Student Office to finalize their enrollment procedures, they were verbally informed about the TFP. Participation in the program and in the research component was voluntary. Students who agreed signed an informed consent form, registered for the program, and completed the pre-test questionnaires during this initial phase. Prior to the questionnaires, the students were given the information request form, which included socio-demographic questions about gender, age, education level, employment, and income status.

The pretest data were collected at the International Student Office during the two-week registration period at the beginning of the semester. The post-test data were collected after the six-month intervention period. Students who had given consent for the post-test were contacted via email and invited to the International Student Office to complete the questionnaires within a two-week period. In both phases, participants completed the scales on a computer under the supervision of the research team. The entire process took approximately 20–30 minutes per student.

2.6. Data Collection Tools

The Beck Anxiety Inventory (BAI) is a self-assessment scale developed by Beck et al. (1988) to measure the frequency of anxiety symptoms experienced by individuals. It is a 4-point Likert-type scale, scored from 0 ('not at all') to 3 ('all the time'), with a total of 21 items, in which participants rate how bothered they are by the symptoms in each item. The increase in the total score on the scale indicates the increase in the individual's feeling of anxiety. Validity and reliability in Turkish were established by Ulusoy et al. in 1998. In the current study, the Cronbach's alpha coefficient for the BAI was .89, indicating high internal consistency. Example items include "Numbness or tingling" and "Fear of the worst happening."

The UCLA Loneliness Scale is a 20-item scale, 10 of which are reverse coded, developed by Russell et al. in 1978. The scale was revised again by Russell in 1996, and the third version was found to be reliable for measuring subjective feelings of loneliness and how often an individual experiences feelings or thoughts related to social relationships. The third version of the UCLA

Loneliness Scale contains 10 items, 5 of which are reverse coded, rated on a 4-point Likert scale ranging from 1 ("never") to 4 ("always"). Higher scores indicate greater loneliness (Gün, 2006). The Turkish version was validated by Demir (1989). In the present study, the Cronbach's alpha coefficient for the UCLA Loneliness Scale was .87. Example items include: "How often do you feel that you are 'in tune' with the people around you?" (Reverse coded) and "How often do you feel left out?".

2.7. Data Analysis

The sample size was calculated using the G-Power 3.1.9.4 program, considering the significance level and effect size of the hypothesis. The effect size was found to be 0.89 (high effect level) based on the mean score of the UCLA pre-test (49.92±16.37) and post-test (33.65±14.10). The sample size was calculated as at least 20 people to find a significant difference between the pre-test and the post-test, while α=0.05 and 1-β=0.95, which means the margin of error was 0.005 and the power of the test was 95%. The results were first examined in terms of the demographic characteristics of the sample included in the study. The SPSS 25.0 package was used for data analysis in the study. Descriptive data on the socio-demographic information of the individuals participating in the study were presented as N and % for categorical variables and mean±SD or median (IQR) tables for continuous variables. The study data were analyzed for normality, with Kolmogorov-Smirnov values set at p>0.05 for the UCLA scale and p<0.05 for the Beck Anxiety Inventory. Therefore, the paired t-test, which is a parametric test, was used to compare the pre- and post-UCLA scores, and the Wilcoxon test, which is a non-parametric test, was used to compare the pre- and post-Beck Anxiety scores. p<0.05 was considered statistically significant.

3. RESULTS

The benefits of the program were analyzed by measuring students' loneliness and anxiety before and after participating in the TFP, which was designed for students just starting university. Nineteen of the 58 participants did not complete the post-test of the Beck Anxiety Inventory, and 16 participants did not complete the post-test of the UCLA Loneliness Inventory. Therefore, 39 participants were included in the Beck Anxiety analyses and 42 participants in the UCLA Loneliness analyses. Demographic information for participants is provided in Table 1.

The Beck Anxiety Inventory pre-test scores ranged from 0 to 55 (M = 9.92, SD = 11.22), while post-test scores ranged from 0 to 20 (M = 7.19, SD = 6.19). UCLA Loneliness Scale pre-test scores ranged from 12 to 36 (M = 22.84, SD = 5.27), and post-test scores ranged from 10 to 30 (M = 20.17, SD = 5.73) (Table 2).

Table 2.
Descriptive Statistics of UCLA Loneliness Scale and Beck Anxiety Inventory

Scales	N	Min	Max	M	SD
Beck Anxiety Inventory-Pre Test	52	0	55	9.92	11.223
Beck Anxiety Inventory-Post Test	43	0	20	7.19	6.185
UCLA Loneliness Scale-Pre Test	56	12	36	22.84	5.27
UCLA Loneliness Scale-Post Test	42	10	30	20.17	5.734

Abbreviations: N: Sample, SD: Standard Deviation, M: Mean

The analysis of the differences between the Beck Anxiety Scale and the UCLA Loneliness Scale pre- and post-test scores of the study participants is presented in Table 3 and Table 4.

Table 3.
Paired T-Test Result of UCLA Loneliness Scale

Scale	Pre-Test M±SD	Post-Test M±SD	p
UCLA Loneliness Scale- (UCLA)	22.10±5,060	20.17±5,734	,021*

*p<.05, SD: Standard Deviation, M: Mean

Table 4.
Wilcoxon Test Result of Beck Anxiety Inventory

Scale	Pre-Test Median (IQR)	Post-Test Median (IQR)	p
Beck Anxiety Inventory (BAI)	10	9	,689

*p<.05, Abbreviations: IQR: Interquartile range,

A paired-samples t-test indicated that loneliness scores after the program (M = 20.17, SD = 5.73) were significantly lower than scores before the program (M = 22.10, SD = 5.06), t (41) = 2.39, p = .021. Thus, H1 was supported.

The interquartile range anxiety score (BAI) (9) of the participants after the adaptation studies and the interquartile range score (10) before the adaptation studies were not statistically significant (p = .689). Therefore, H2 was not supported.

4. DISCUSSION AND RECOMMENDATIONS

The level of loneliness among international students decreased after the social adaptation project compared to before it. According to several studies, loneliness can have negative effects, but its effects can be reduced by social adaptation, which involves appropriate social functioning according to social norms (Londono and McMillan, 2015; Neely-Prado et al., 2021; Schulte et al., 2022). Considering these studies, our findings can be interpreted to mean that a targeted friendship program, which is a social adjustment program and is structured with the planning, organizing, leading, coordinating, and controlling functions of management, may contribute to reducing negative emotional states such as loneliness. Researchers conducted a study on 34 newly enrolled students to investigate the issue of social support and its impact on leaving university. The study found that the importance of university-related organizations and the maintenance of harmonious friendships was equivalent to that of family relationships in the sustainability of student life (Wilcox et al., 2005). The interpretation of a mentor-mentee relationship and various social activities in the TFP suggests that these may influence reducing loneliness among newly enrolled students.

In addition to the results of the scales, all participating students, when interviewed at the end of the integration studies, indicated a significant benefit from the social adjustment studies. According to Tutkun (2006), the counselling system for academic support and the system of guidance and support units for personal and social support must be made effective, easily accessible, and helpful to facilitate students' social adjustment. The result of the face-to-face evaluations can be interpreted as the TFP being successful in providing guidance to students to support their social adjustment to university life. In addition to this positive evaluation, the lack of a significant difference in anxiety can be explained by the fact that, as reported by students during the semi-structured interviews, their anxiety was influenced by many factors outside of the university context. Therefore, their responses could not be evaluated solely in relation to the adaptation program.

The TFP has important implications for social adaptation programs for international students. The program has shown a significant reduction in loneliness, indicating the importance of structured interventions in alleviating negative emotional states like loneliness. The positive impact of these programs supports the notion that well-organized and managed social support systems, such as mentorships and social activities, can enhance students' emotional well-being during their transition to university life. The success of the TFP in reducing loneliness could be attributed to its emphasis on building support systems and encouraging a community spirit among students. The reduction in loneliness may be understood within Berry's (1997) acculturation framework and Ward and Kennedy's (1993) sociocultural adaptation model, both of which highlight the role of peer interaction and social belonging in successful adjustment. In contrast, the lack of significant change in anxiety aligns with stress–coping theory (Lazarus & Folkman, 1984), which emphasizes that anxiety is shaped by broader personal, familial, and financial stressors beyond the university context. This suggests that while the program effectively addressed social connectedness, a more holistic approach integrating academic, social, and personal support systems is required to reduce anxiety.

This study examined changes in loneliness and anxiety among international university students participating in a structured social adaptation program and its impact on loneliness and anxiety among international university students when the university applies a program aiming to help them with the aforementioned feelings. Through comprehensive analysis and empirical investigation, several key findings emerged. Firstly, participation in the program was associated with lower loneliness scores, suggesting that supportive social networks in the host environment may help alleviate feelings of loneliness. Secondly, no significant change was observed in anxiety levels, suggesting that while the program successfully addressed loneliness, its direct impact on anxiety was limited. Because anxiety is shaped by multiple internal and external factors, it was anticipated from the outset that the program might have limited influence on anxiety levels. Given the time constraints, future studies could strengthen the results by conducting longer ones. This may also allow more participants to take part in the study. The mixed method should be continued, as it is more efficient in studies with fewer participants and allows for cross-checking. In addition, studies on student satisfaction and compliance can be conducted. A new subject-specific scale can also be developed. It is an important and original study that will contribute to literature, as there is no similar application and research in this area.

4.1. Implications

This study presents the following seven implications for those in academia and practice who seek to enhance the social adjustment and well-being of international students. The findings indicate that organized initiatives, like the TFP, have the potential to notably decrease feelings of loneliness among international students. It is recommended that universities incorporate comparable programs into their orientation processes, emphasizing mentor-mentee relationships and various social activities to enhance a sense of belonging and social cohesion. Moreover, participation in the program was associated with reduced feelings of loneliness; however, no statistically significant change was observed in anxiety. This suggests that the anxiety experienced by international students may arise from larger influences beyond the university setting. Institutions should establish formal partnerships with on-campus counselling centers and external mental health professionals to provide targeted services for international students. These services could include culturally sensitive counseling, peer-support groups, and stress-management workshops that address both academic pressures and personal life stressors. In addition, customized strategies for varied student requirements are needed. The majority of participants were single undergraduate students aged between 18 and 29, with diverse cultural and linguistic backgrounds in our study group. Considering these characteristics, it is

important to create flexible programs that take into account individual differences such as cultural background, language skills, and previous academic experiences. Customizing interventions to address these needs can significantly improve their overall effectiveness. Promoting additional inquiry through diverse methodologies is also recommended, as subsequent investigations ought to incorporate mixed-methods or qualitative strategies to obtain a more profound understanding of the experiences of international students. Integrating qualitative data with quantitative findings may enhance the exploration of intricate emotional states, like anxiety, in more depth. Emphasis on intercultural communication and peer support is another key implication, as intercultural communication and peer support have surfaced as essential elements in facilitating social adjustment. Universities ought to offer training for both international and domestic students to enhance mutual understanding and collaboration, ultimately cultivating a more inclusive campus environment. Finally, longitudinal studies on adjustment and retention are recommended because the present study was limited to a six-month pilot program. It is important for future research to conduct longitudinal studies to examine whether the observed decrease in loneliness among participants is sustained over time and how it may be associated with long-term outcomes such as academic achievement and retention. This would offer a more profound insight into the sustainability of these interventions. Implementing these recommendations allows universities to foster a more inclusive, supportive, and holistic environment for international students, effectively addressing their emotional and social needs while enriching their overall university experience.

4.2. Limitations

This study has some limitations that should be acknowledged. The Beck Anxiety Inventory and UCLA Loneliness Scale are well-validated instruments for measuring universal constructs; however, they may not fully capture culturally specific aspects of international students' adaptation. This potential limitation should be taken into account when interpreting the findings and can be addressed in future studies by developing or adapting culturally sensitive tools. Moreover, the present study was limited to a six-month pilot program, which may restrict the generalizability of the results. Although qualitative interviews enriched the analysis, the number of participants was limited.

Research and Publication Ethics Statement

The research was approved by the Ethics Committee of Üsküdar University (61351342/February 2023-11). Digital informed consent was obtained by all participants.

Contribution Rates of Authors to the Article

GA and NEA designed the study, collected the data, did the analysis, and wrote the manuscript. GA, MK and KNT provided critical revisions. GA, NEA, FZG and PA contributed to the final version of the manuscript. FZG reviewed the article before submission scientifically besides spelling and grammar. GA, TTE and KNT supervised the execution. All authors read and approved of the final manuscript.

Statement of Interest

The authors declare no conflict of interest.

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