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The influence of social media on the social identification and cross-cultural
adaptation of international students in Europe:
A longitudinal analysis

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Abstract

Acculturation research of international students has emphasized the importance of identification patterns and feelings of belongingness to achieve a successful adaptation during the student mobility period; these studies have tended to focus on identification towards the home and host country only. However, the rapidly increasing diversity in host societies calls for a more inclusive approach. Thus, the present study aimed at expanding this notion by including home nationals that live in the host country and other international students as groups that can provide a sense of identification that predicts adaptation. In the current globalized world it is clear that acculturation experiences are being shaped by the advancements of technology and social media, which have allowed international students to access resources that were not available years ago. Thus, through a longitudinal design with three time points, the study examined in a sample of 234 international students in Europe, the impact that social media usage has in the social identification processes of international students. The results showed that social media usage and identification are positively related among all groups, however there is a direct longitudinal effect only for the group of host nationals and international students. In the case of identification and cross-cultural adaptation, effects were found for all groups except for host nationals. The overall model that tested the effects of social media usage on identification and later on adaptation was accurate for the international students' group.

Keywords: acculturation, cross-cultural adaptation, social media, social identification, international students, longitudinal design

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Introduction

The interconnectedness and intercultural exchange that characterizes current migration dynamics have led social psychologists to study what happens when immigrants arrive to their host countries, how do they adapt to their new environments, and what implications the migration experience has in their lives (Berry, Phinney, Sam & Vedder, 2006). One important group of short-term sojourners, or immigrants with a temporary stay in a new host country, are international students. According to the OECD Annual Report (2018), the number of international students enrolled in tertiary education increased from 2 million in 1999 to 5 million in 2016. This number is expected to rise due to the development of educational policies that encourage mobility and the demand of intercultural skills in the current globalized market (OECD, 2018).

The mobility experience can be an exciting opportunity for international students; however, all student sojourners go through an acculturation process as they experience different changes that result from having contact to new cultures (Berry et al., 2006). While trying to adapt to their host country, international students can encounter many stressors, and if they fail to cope with them, these could enhance or lead to experiences of anxiety, depression, homesickness, isolation or even suicidal ideation (Brunsting, Zachry & Takeuchi, 2018). Thus, studying different protecting factors and coping mechanisms that can aid during the acculturation process of international students and migrants continues to be an important goal in the field of acculturation studies (Kuo, 2014) as migration is an ongoing phenomenon that is constantly spreading and changing (McAuliffe & Ruhs, 2017).

Social ties and social support are important protective factors during the acculturation process (Kuo, 2014) and prominent predictors of a successful cross-cultural adaptation (Brunsting et al., 2018). These factors have been studied across different contexts and populations, and studies support their benefits in the acculturation process (Bierwiazzonek & Waldzus, 2016). Through social ties and support international students can access necessary resources to cope with the challenges they face, and can develop a sense of belonging in a new country even if they are not surrounded by the people and culture they know the most (Ward, Bochner & Furnham, 2001). One related and crucial factor in current migration times, although

less explored than social support, is the role that social media usage has in the cross-cultural adaptation of sojourners.

Studies have found that traditional and recently digital media, provide necessary information to sojourners about their home and host countries that can help them to adapt (Dalisay, 2012). Social media networks expand this reality as they also allow to maintain and create social ties (Hendrickson & Rosen, 2017) which are potential providers of social support during the migration experience (Hofhuis, Hanke & Rutten, 2019). These aspects, however, remain understudied in acculturation research, especially when considering that there are over three billion active users of social media platforms in the world (Kemp, 2019). Furthermore, as social media allow users to engage in virtual spaces where they can express themselves and interact in instant and synchronous communication (Amante, 2016), they represent a resource of great value for the adaptation of contemporary sojourners. Thus, in order to fill this gap in the field of cross-cultural psychology, the first aim of the current study is to analyze the effect that social media have on the cross-cultural adaptation of international students.

International students are one of the most researched groups in the acculturation field, however, many of the studies are based on Berry's (1997) model of acculturation (Bierwiazzonek & Waldzus, 2016); which proposes acculturation strategies for migrants based on their levels of home culture maintenance and host country engagement. Even though this model is the leading theoretical framework in acculturation studies, the globalization phenomenon calls for studies that involve more complex intergroup and migration dynamics, which besides home and host culture exchange, include multi-national and multi-cultural experiences. For example, international students create significant experiences with other international students as they have more continuous contact with this group compared to other groups (e.g. Schartner, 2015; Sigalas, 2010). Additionally, the identification with this group has been found to be an important factor for adaptation (Beech, 2018; Tran & Gomes, 2017) as they can provide social support and alleviate the negative effects of perceived discrimination (e.g. Bierwiazzonek, Waldzus & van de Zee, 2017). Thus, the second aim of the present study is to explore the role that the international student group has in the cross-cultural adaptation of international students.

Finally, is important to take into account that recent research in the field of acculturation, with some exceptions (e.g. Billedo, Kerkhof, Finkenauer & Ganzeboom, 2019; Hendrickson &

Rosen, 2017; Hirai, Frazier & Syed, 2015; Hu, Liu & Gu, 2018; Motti-Stefanidi, Pavlopoulos & Asendorpf, 2018), has mainly focused on cross-sectional studies. Cross-sectional findings are crucial; however, scholars have promoted the engagement in longitudinal designs to address the acculturation experience of international students (Brunsting et al., 2018; Smith & Khawaja, 2011). This allows to accurately assess factors that can change over time or that affect the adaptation differently in different phases of the sojourn (Hechanova-Alampay, Beehr, Christiansen & Van Horn, 2002; Ward, Okura, Kennedy & Kojima, 1998). Longitudinal designs also allow to infer causal relationships between social variables over time, providing better insights into the direction of the relation, which can remain ambiguous in cross-sectional designs (Bryman, 2016). In acculturation research, this contributes to a better understanding of theoretical assumptions regarding the dynamic relationship between different predictor variables and the adaptation of migrants and sojourners (Ramos, Cassidy, Reicher & Haslam, 2016). Thus, the third and final aim of the current study is to examine the cross-lagged effects of social media and social identification on the cross-cultural adaptation of one group of international students in Europe through three time points.

In sum, this study will contribute to extant acculturation literature by addressing three neglected factors in current acculturation experiences of international students: 1) the role of social media usage, 2) the role of social identification with other international students, next to home and host nationals; and 3) the longitudinal effects between social media usage and social identification in the cross-cultural adaptation of international students. The results can provide a valuable resource in the development of institutional policies or interventions concerned with the adaptation of international students.

Chapter I - Literature Review

International students have become one important group of sojourners as technology and migration policies favor the mobility of students in order to promote intercultural exchange and educational advancements (OECD, 2018). Students who decide to migrate are motivated by different push and pull factors that prompt them to expand their educational opportunities; and it is widely recognized that exchange or international programs have great benefits and represent exciting experiences for students (Tran & Gomes, 2017). This experience is not however, exempt of difficulties; as international students navigate into finding the best ways to adapt to their host societies, they face different challenges prior (e.g. Garza, 2015; Geeraert & Demoulin, 2013), during (e.g. Ramos et al., 2016) and after (e.g. Presbitero, 2016) their sojourn. In order to achieve a successful cross-cultural adaptation, sojourners need to cope with these challenges while maintaining a healthy well-being (Searle & Ward, 1990), which in turn allows them to be effective in their daily lives (Ward et al., 2001). The current study focused on the cross-cultural adaptation as the main outcome and goal of the sojourn of international students.

1.1. Cross-cultural adaptation of international students

According to Ward and Searle (1991), the cross-cultural adaptation has two main components, which are the psychological and the sociocultural adaptation. Even though they are essentially related, they should be studied apart since sojourners achieve them through different mechanisms (Searle & Ward, 1990; Ward & Kennedy, 1994). Psychological adaptation refers to the general well-being of the acculturating individual, and it belongs to the stress and coping framework, which explains that sojourners learn to manage stress in their new environment and cope with it through different strategies or resources in order to maintain a healthy well-being (Ward et al., 2001). On the other hand, sociocultural adaptation refers to the ability that the sojourner has to manage everyday tasks in the new culture, which is developed through a culture learning process. This process entails getting to know norms, values and behaviors of the host society, and developing skills in practical and communicative tasks that will allow for a functional life in the new culture (Ward et al., 2001; Wilson, Ward & Fischer, 2013).

Adapting to a new culture can be a challenging experience as this is influenced by several forces (Horenczyk, Jasinskaja-Lahti, Sam & Vedder, 2013), which means that for sojourners to successfully adapt, not only their choices and abilities play a role, but also their contexts and interactions in the host society (Kuo, 2014; Ward & Geeraert, 2016). For example, in their systematic review, Smith and Khawaja (2011) described that the most common stressors that have been studied in international students, which are very diverse, are language barriers, discrimination, educational stressors due to lack of understanding or adjustment to teaching style, sociocultural stressors that come along the process of creating social networks and learning social norms, and practical stressors, which refer to dealing with bureaucracy. Brunsting and colleagues (2018) found that the main predictors studied of psychological adaptation in international students were age, gender, belonging, support, language, discrimination and interpersonal interaction. Whereas the main predictors for sociocultural adaptation were level of university, academic interventions, discrimination, belonging, interaction and language. Along the same line, Wilson et al. (2013) found that the main factors contributing to sociocultural adaptation were culture knowledge, previous cross-cultural experiences, culture distance, language proficiency and contact with host nationals. Bierwiazzonek and Waldzus (2016) summarize and pinpoint in their review that language barriers and discrimination are main acculturative stressors, while social support and social ties are one of the main coping resources used across different groups of migrants.

With the aforementioned in mind, it is clear that the acculturation experience can be a diverse and complex process, which scholars attempt to explain and understand through different approaches and variables (Brungsting et al., 2018). One important contribution in this endeavor has been the study of social identification and how identification patterns that change and emerge during the international experience can influence the cross-cultural adaptation of migrants and sojourners (Ward et al., 2001). As international students interact with others and learn about their host societies, they can develop a sense of belonging and different levels of identification with the groups they are part of (Tran & Gomes, 2017). Thus, the present study focused on the role that social identification plays in cross-cultural adaptation.

1.2. Social identification of sojourners

When international students arrive to their host country, as any migrant and sojourner, they face the reality of constant intercultural encounters with host nationals and other groups; hence intergroup relations and processes are considered fundamental components of acculturation to better understand adaptation (Ward & Kennedy, 1994). Host nationals might not only speak a language that students are not familiar with, but they might also move around in different spaces as their lives are stable and more settled than sojourners'. This reality accentuates the foreignness of international students and can boost a feeling of not belonging (Bierwiazzonek et al., 2017). According to the Social Identity Theory of Tajfel and Turner (1979), which states that people define their identity according to the groups they are part of, a feeling of belonging is crucial to maintain a healthy well-being and self-esteem. As identification processes have been found to be more important in minority groups and can be affected by significant life changes such as a migration experience, the study of social identification has been approached by several acculturation studies (Ward et al., 2001), which highlight its influence in achieving a successful cross-cultural adaptation among migrants and sojourners (Berry et al., 2006).

According to the rejection-identification model (Branscombe, Schmitt & Harvey, 1999), members of minorities (i.e. international students in this case) enhance the identification with their ingroup as a way to cope with adverse situations (e.g. prejudice) within a society that favors the majority. Studies on acculturation have found that this holds true in the case of migrants and international students, which show that identification functions as a coping mechanism that can help them face stressors during their acculturation such as discrimination (Ramos et al., 2013; Schmitt, Spears & Branscombe, 2003). This is also based on the fact that social identification entails having access to social support which is a great predictor of well-being (Haslam, Jetten, Postmes & Haslam, 2009). In line with these studies, we argue that international students, out of the feeling of being outsiders and thriving to have a successful and functional life in their host societies, develop different levels of social identification with the groups they interact with. This in turn will have an influence in their adaptation.

With the aforementioned in mind is important to acknowledge that international students can base their social identification on shared experiences, qualities, interests, or even locations (e.g. Gomes, Berry, Alzougool & Chang, 2014), which should be different depending on the

groups available in the host society and the ones previously established in the home society. Thus, social identification patterns might affect differently depending on the group that functions as a source (e.g. Bierwiazzonek et al., 2017; Ramos et al., 2013). And since current intergroup dynamics during a sojourn are more complex than ever, it is important to address the differences between the groups available to international students to grasp a better understanding of the role that identification processes have in the cross-cultural adaptation (Verkuyten, Wiley, Deaux & Fleischmann, 2019). Thus, this study focuses on four different groups that international students have contact with (from here onwards 'target groups'): people from their home country (home nationals), people from their home country that live in their host country (local home nationals), people from their host country (host nationals), and other international students.

Regarding the group of home nationals, the benefits of social identification can be perceived as ambiguous or sometimes conflicting. On one hand, home nationals can provide long distance emotional support and enhance the well-being of international students, but on the other hand they can also contribute to feelings of homesickness and loneliness that might affect the cross-cultural adaptation in the host country (Gomes et al., 2014; Hofhuis et al., 2019; Lim & Pham, 2016). Being home nationals in a different geographical context, the identification with this group might not be a great coping resource as international students need to respond to the demands in their host countries. Studies have found that despite the benefit they can present, stronger identification with home nationals can lead towards greater sociocultural difficulties (Berry et al., 2006; Ward & Searle, 1991) and greater distance from host nationals (Ramos et al., 2013), and this identification might even aggravate the effect of acculturative stressors, such as symbolic threat (Bierwiazzonek et al., 2017). Thus, we expected that the higher social identification international students have with home nationals would lead to a poorer cross-cultural adaptation in general.

Hypothesis 1: The identification international students have with home nationals will have a negative influence on their (a) psychological and (b) sociocultural adaptation.

Although there are not many studies that address identification with local home nationals, this is an important group in the adaptation process, as they can be a direct source of social support. Additionally, by sharing the same contextual experience in the host country, this group can enhance a greater sense of belonging and promote home culture values while sharing cultural

skills that are needed in the host society (Ward, Fox, Wilson, Stuart & Kus, 2009). Having identification with the home culture has been found to have a positive effect in sojourners adaptation, however the loss of networks from the home country can threaten this process. This is why having local home national networks available, can help international students to enhance their well-being and avoid isolation (Sawir, Marginson, Deumert, Nyland & Ramia, 2008). Thus, we expected that high identification with local home nationals would lead to a better cross-cultural adaptation in general.

Hypothesis 2. The identification international students have with local home nationals will have a positive impact on both their (a) psychological and (b) sociocultural adaptation.

Despite the fact that host nationals might not be the most accessible or preferred group in cases of discrimination (e.g. Ramos et al., 2016), when available they can be a great coping and learning resource for international students' adaptation (Berry et al., 2006). In general, studies in acculturation have found that identification with this group tends to lead towards the best adaptation outcome of migrants and sojourners (Sam & Berry, 2010). It has been found that international students that have higher levels of host national identification experience less sociocultural difficulties (e.g. Ward & Kennedy 1994; Cemalcilar, Falbo & Stapleton, 2005) and greater levels of well-being (e.g. Hofhuis et al., 2019; Geeraert & Demoulin, 2013). Thus, we expected that the identification with host nationals would lead to a better adaptation in general.

Hypothesis 3: The identification international students have with people from the host country will have a positive impact on both their (a) psychological and (b) sociocultural adaptation.

Is important to consider that because of the short-term duration of their sojourn experience, international students might be less involved in having contact with host nationals (Ward et al., 2001), and move around in spaces that enhance the contact with other internationals (e.g. Fincher & Shaw, 2011; Williams & Johnson, 2018). Thus, studying the social identification with the international students' group adds a better understanding to their acculturation process. International students share the same experience of being away from home and face similar acculturative and academic challenges. These experiences bring them closer together and allow for a stronger social identification that can benefit their cross-cultural adaptation. Studies have found that social ties and support from international students is positively related to more adaptive acculturation strategies (Cao, Zhu & Meng, 2017; Kashima & Loh, 2006; Sullivan &

Kashubeck-Wes, 2015). Additionally, the social identification with this group has been found to be beneficial to mitigate the negative effects of acculturative stressors, such as prejudice and perceived discrimination (e.g. Bierwiazzonek et al., 2017; Schmitt et al., 2003). In line with the literature, we expected that the international students' group would have a positive impact on their cross-cultural adaptation.

Hypothesis 4. The identification international students have with other international students will have a positive impact on both their (a) psychological (b) sociocultural adaptation.

In sum, the study of social identification with different groups is an important step into understanding cross-cultural adaptation in current mobility times (Hong, Zhan, Morris & Benet-Martínez, 2016). Identification patterns and a sense of belonging allow acculturating individuals to experience meaningful social networks that can be crucial for their acquisition of cultural competences (e.g. Lee, 2010), access to social support (e.g. Sullivan & Kashubeck-West) and to experience well-being (Ward & Searle, 1990). These different social identifications develop as international students interact with their networks and the groups surrounding them, and in current times, social media provide tools to promote this interaction (Forbush & Foucault-Welles, 2016). Thus, the current study also explored the role that social media has in the social identification of international students.

1.3. Use of social media among sojourners

Even though social media platforms are present in the life of every sojourner, this reality has not always been the case. In the past, communication scholars interested in the role of media in the acculturation of migrants relied heavily on the study of traditional and mass media (i.e. television, radio, press, phone, among others), as these were the only available channels for immigrants to keep connected to their home culture, and to gain practical and ideological knowledge about their host societies (Hwang & He, 1999; Moon & Park, 2007; Reece & Palmgreen, 2000). These elements of media became even more relevant as studies engaged in populations of refugees, who usually had more difficulties to know the language and come in continuous contact with people from their host country (Tudsri & Hebbani, 2015). Studies were consistent in finding that mass media communication was important, but interpersonal communication was a stronger predictor of the adaptation of migrants (Kim, 2001; Lakey, 2003).

Social media, however, came to change this reality as they are media channels that allow for immediate interpersonal communication transcending the boundaries of time and space (Ribeiro & Aires, 2016). Migrants are no longer passive receivers of information nor rely solely on traditional media to enhance their identification with both their home and host societies when direct contact is not available. Thus, recent studies started to address the role of new media and social media in acculturation, finding that they have a significant impact in the adaptation of sojourners as they provide access to social support (Croucher, 2011; Shuter, 2012). These studies, however, have tended to focus on long-term migrants and refugees (e.g. Alencar, 2018; Billedo et al., 2019; Croucher & Rahmani, 2015; Hmida, Ozcaglar-Toulouse & Fosse-Gomez, 2009; McKelvy & Chatterje, 2017) or on international students who migrate from Asia (e.g. Jiang & de Bruijn, 2014; Park, Song & Lee, 2014; Yang, Wu, Zhu, Brian & Southwell, 2004; Ye, 2006). Thus, we deemed important to conduct our study with international students that have different characteristics from previously researched populations.

Additionally, we also deemed important to address the longitudinal effects of social media, as they impact differently on different phases of an international experience. For example, Hendrickson and Rosen (2016) found in their longitudinal study, that even though international students increased their use of social media usage as they arrived to their host country in order to create new social ties and maintain ties with home nationals, students that spent less time on social media in the long term increased their face-to-face interactions with host nationals.

In sum, scholars have found that social media usage has a clear impact on adaptation due to its ability to increase social networks and access information at different times of the sojourn (Forbush & Foucault-Welles, 2016). However, important psychological mechanisms that underlie this impact, are still understudied. For instance, no study has yet explored the influence of social media on the identification sojourners develop towards groups they interact with through media, which is one core element of the present study. Thus, this research contributes to the field by bridging the areas of communication and social psychology to grasp an integral understanding of how social media impact the social identification and in turn the cross-cultural adaptation of contemporary sojourners.

1.4. Social media and social identification

Social media have provided an extension of social contexts that allows users to engage in intergroup processes as they interact with one another (Carr, 2017). As Sawyer and Chen (2011) found in their study, when international students used social media with host nationals, they developed a sense of belonging to their new culture that helped them to adapt, while they also felt that they still belonged with home nationals because social media blurred the distance between them. In a similar line, Li and Tsai (2015), who studied the relationship between Hispanics' social media usage and their acculturation process into the American society, found that social media use in English increased an individual's orientation to both American and Hispanic culture, but social media in Spanish tended to increase the orientation towards Hispanic culture and decrease the orientation towards American culture.

Both studies (i.e. Li & Tsai, 2015; Saywer & Chen, 2011) showcase that social media usage provides resources for international students to identify with different social groups, which is expected since social media cannot be exempt of communication as the content depends on interaction with those groups and this can have an impact in the offline lives of users (Carr, 2017). For example, Cemalcilar et al. (2005) found that media communication with home nationals positively predicted ethnic identification and perceived social support, which in turn predicted a higher psychological adaptation. And even though the identification with host nationals was not predicted by media usage in the study design, it did have a significant effect on the cross-cultural adaptation.

Unfortunately, there are no available studies that have addressed the social identification with different groups that emerges from social media usage in the acculturation framework. Studies have mainly focused on the effect that social media usage has in the adaptation of sojourners and migrants. However, keeping in mind that acculturating individuals develop their social identification in response to the intergroup context (Schmitt et al., 2003), and considering that social media can serve as either an actual intergroup context or allow for intercultural encounters (Cohen, 2017), we expected that social media usage would lead to a greater social identification.

Hypothesis 5. The social media usage of international students will increase their identification with the four target groups: (a) home nationals, (b) local home nationals, (c) host nationals, and (d) other international students.

To summarize the hypotheses outlined in the present study, a general conceptual model is provided in Figure 1. Although the model incorporates the four groups, the analyses were carried out independently for each group.

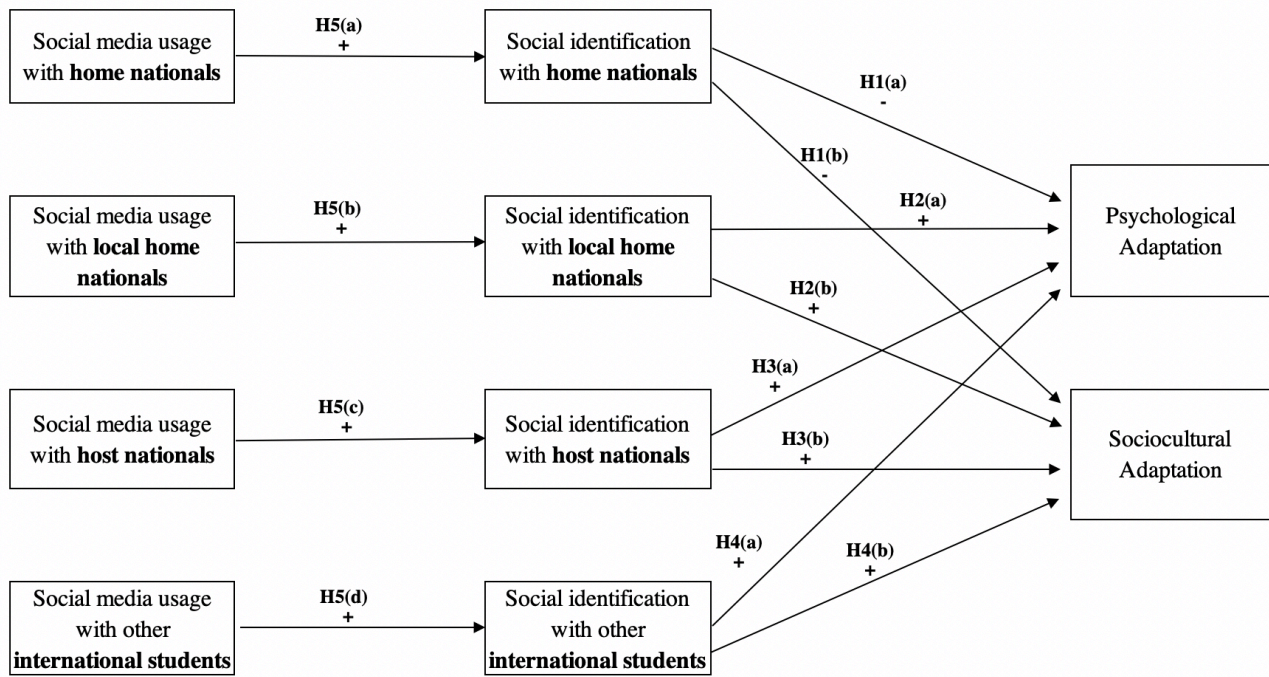


Figure 1. Conceptual model of the effects of social media usage and social identification variables on the psychological and sociocultural adaptation of international students during their sojourn.

Chapter II - Method

2.1. Design, Participants and Procedure

This was a quantitative and longitudinal panel study, where data were collected in three different time-points (T1, T2, T3) with the same group of participants across time. After submitting the original research proposal for an ethical approval, the Ethics Review Board of the Erasmus University of Rotterdam granted the approval for the study.

Participants were international students enrolled in a European university. The majority of participants (95%) were recruited through e-mail distributions with the support of an international or exchange student coordinator at a university in Spain, Portugal and Poland. The remaining 5% were recruited online by distributing a personalized link in different online communities. All participants received an online questionnaire available in Qualtrics and to respond it they had to agree with an informed consent. The consent highlighted the purpose of the study, the voluntariness of participation and ethical approval; it also emphasized the anonymity of participants and the storage of personal information in encrypted files. There was no compensation of any kind given to participants.

The first wave of the study (T1) was collected at the beginning of the Fall semester throughout October and early November of 2018. The second wave (T2) was collected throughout December of 2018. Finally, the third wave (T3) was collected during the month of February 2019, which represented the end of the semester. Reminders were sent to participants for three or four weeks after receiving the first e-mail. 320 participants completed at least one scale of the questionnaire in at least one time point of the study ($N_{T1} = 191$, $N_{T2} = 157$, $N_{T3} = 121$), however, after removing respondents that were not included in the final analyses due missing data in control variables, the final sample consisted of 234 ($N_{T1} = 138$, $N_{T2} = 128$, $N_{T3} = 112$). The attrition rate of participants was of 51.4% from T1 to T2, 48.4% from T2 to T3 and 60.1% from T1 to T3. Having these dropout rates is expected in longitudinal studies, therefore statistical methods have been created to control systematically for attrition (Little, 1995).

The mean age of the participants was 22.2 (SD = 3.2, Range = 18 – 46), 70.5% were females. There were 35 nationalities reported although the majority of participants were from

another European country (84.6%). From Europe, the most represented countries were Italy (26.5%), France (18.4%), Germany, (13.7%) and UK (6.4%). From other continents, the most represented nationalities were from Brazil (2.1%), USA (1.7%), Japan (1.3%) and Australia (.9%); 5.1% did not respond. 71.4% were studying in Spain, 21.4% in Portugal, and 6.0% in Poland; the rest (1.2%) did not respond. Finally, 38.5% of participants reported to have had a previous migration experience in the past, where they lived for more than 3 months outside of their home country.

2.2. Measures

The scale of *Social Media Usage* was based on two scales that measure main motives of social media usage (Rosen, Whaling, Carrier, Cheever & Rökkum, 2013; Sheldon & Bryant, 2016). The scale referred to activities performed in social media with a specific target group. Items included ‘How often do you interact with profiles (tagging, posting, sharing, etc.)’, ‘How often do you private or group text chat’ and ‘How often do you keep up to date with events (creating, inviting, being invited)’. A Likert scale ranging from 1 (Never) to 7 (Very often) was provided with the items. This scale was reformulated four times to ask about frequency of involvement in social media with the four target groups: home nationals (9 items, $\alpha_{T1} = .83$, $\alpha_{T2} = .87$, $\alpha_{T3} = .84$), local home nationals ($\alpha_{T1} = .92$, $\alpha_{T2} = .94$, $\alpha_{T3} = .92$), host nationals ($\alpha_{T1} = .91$, $\alpha_{T2} = .89$, $\alpha_{T3} = .90$), and international students ($\alpha_{T1} = .87$, $\alpha_{T2} = .89$, $\alpha_{T3} = .92$).

The scale of *Social Identification* was adapted from the scale of Mael and Tetrick (1992) that intends to measure identification with a psychological group. Items included ‘When someone criticizes [group], it feels like a personal insult’ and ‘When I talk about [group], I usually say “we”, rather than “they”’. A Likert scale ranging from 1 (Strongly disagree) to 7 (Strongly agree) was presented with the items. The participants responded to the scale four times to address the identification they had with the four target groups: home nationals (6 items, $\alpha_{T1} = .73$, $\alpha_{T2} = .75$, $\alpha_{T3} = .74$), local home nationals ($\alpha_{T1} = .75$, $\alpha_{T2} = .75$, $\alpha_{T3} = .81$), host nationals ($\alpha_{T1} = .82$, $\alpha_{T2} = .79$, $\alpha_{T3} = .85$), and international students ($\alpha_{T1} = .85$, $\alpha_{T2} = .83$, $\alpha_{T3} = .85$).

Psychological Adaptation was measured with the complete scale of Demes and Geeraert (2014). The scale analyzed the frequency of several statements, sample items included ‘Excited about being in the host country’ and ‘Sad to be away from your home country’. The items were

presented with a Likert scale ranging from 1 (Never) to 7 (Always), negative items were reverse-coded prior to analysis to match a better adaptation with a higher score (10 items, $\alpha_{T1} = .83$, $\alpha_{T2} = .83$, $\alpha_{T3} = .84$). Finally, *Sociocultural Adaptation* was measured with a selection of items from the recently reviewed scale of Wilson, Ward, Fetvadjev and Bethel (2017), which measures cultural competencies in the host country. Items included ‘Building and maintaining relationships’, ‘Finding my way around’ and ‘Interacting at social events’ (9 items, $\alpha_{T1} = .78$, $\alpha_{T2} = .83$, $\alpha_{T3} = .86$). A Likert scale was presented ranging from 1 (Not at all competent) to 7 (Extremely competent).

Age, gender and previous migration experience were included as control variables; where age was coded as a continuous variable, gender was coded as a dummy variable (0 = Female, 1 = Male) and migration experience was coded as another dummy variable (0 = no past migration experience, 1 = at least one past migration experience). An overview of descriptive statistics and correlations among variables is provided in Table 1.

2.3. Statistical Analysis

For the current study a *cross-lagged panel design* was applied to test the aforementioned hypotheses, since directional relationships between multiple variables are being analyzed across time. The cross-lagged panel model is used when two or more variables have been measured on more than one occasion, and there is an intention to know the cross-lagged effects of one variable at an earlier time on another variable at a later time through the analysis of residual change. This entails that previous levels of the outcome variable have been controlled for to rule out the possibility that the cross-lagged effect is due to correlations in previous times (Kearny, 2017; Selig & Little, 2012). This model is a type of *structural equation model* (SEM) for longitudinal data, which examines structural relationships between variables (Schumacker & Lomax, 2010).

This design provides important aspects for causal inference, such as temporal precedence measuring effects through time (Selig & Little, 2012), and causal predominance through identifying the effect of one variable over another without a reciprocal influence (Kearny, 2017). However, results from this kind of analysis need to be discussed with caution since they are time-interval dependent (Kuiper & Ryan, 2018), and the nature of the variables studied does not allow to infer causal relationships solely on statistical models (Selig & Little, 2012). To control for

systematic attrition and *missing data* in the current study, the Maximum Likelihood Estimation (ML) was used, which is designed to estimate parameters that most likely would have resulted from the sample data (Keith, 2015, Little, 1995).

Social media usage and identification of sojourners

Table 1. Correlations and Descriptive Statistics at T1, T2 and T3

Variables	M	SD	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30		
1. SMHome T1	4.12	1.18	-																															
2. SMHome T2	4.27	1.24	.69**	-																														
3. SMHome T3	4.27	1.15	.49**	.63**	-																													
4. IDHome T1	4.44	1.11	.39**	.31*	.19	-																												
5. IDHome T2	4.49	1.07	.29*	.20*	-.02	.71**	-																											
6. IDHome T3	4.45	1.03	.35**	.18	.25*	.70**	.57**	-																										
7. SMHomeInHost T1	3.57	1.49	.36**	.38**	.18	.27**	.10	.20	-																									
8. SMHomeInHost T2	3.82	1.51	.38**	.59**	.25	.23	.13	.10	.72**	-																								
9. SMHomeInHost T3	3.66	1.46	.25	.41**	.48**	.27**	.03	.33**	.66**	.72**	-																							
10. IDHomeInHost T1	4.10	1.13	.32**	.22	.19	.70**	.48**	.51**	.32**	.19	.23	-																						
11. IDHomeInHost T2	4.25	1.05	.29*	.18*	.04	.57**	.59**	.31*	.22	.27**	.16	.60**	-																					
12. IDHomeInHost T3	4.23	1.18	.31*	.20	.26**	.48**	.31*	.63**	.40**	.22	.38**	.57**	.34**	-																				
13. SMHost T1	3.35	1.32	.50**	.47**	.38**	.18*	.07	.20	.46**	.42**	.38**	.09	.09	.14	-																			
14. SMHost T2	3.63	1.25	.29*	.42**	.34**	-.18	-.15	-.24	.28*	.36**	.28*	-.23	-.06	-.22	.56**	-																		
15. SMHost T3	4.05	1.28	.47**	.60**	.56**	.23	-.02	.11	.40**	.39**	.48**	.13	-.03	.19	.53**	.57**	-																	
16. IDHost T1	3.07	1.18	.14	-.01	-.03	.14	.12	.02	.18*	.11	.14	.32**	.07	.15	.04	-.00	.09	-																
17. IDHost T2	3.09	0.98	.13	.19*	.09	.31*	.09	.16	.33**	.29**	.33**	.26*	.17	.23	.28*	.30**	.34**	.51**	-															
18. IDHost T3	3.33	1.29	.11	.17	.14	.32*	.32**	.31**	.34*	.25	.40**	.37**	.29*	.47**	-.00	-.09	.19	.47**	.43**	-														
19. SMInternational T1	4.12	1.27	.41**	.43**	.25	.16	.09	.01	.39**	.32*	.41**	.13	.07	.13	.46**	.40**	.48**	-.02	.13	.12	-													
20. SMInternational T2	3.97	1.20	.31*	.37**	.22	-.06	.03	-.21	.26*	.40**	.42**	-.11	.07	-.05	.35**	.62**	.36**	-.11	.16	-.01	.73**	-												
21. SMInternational T3	4.07	1.41	.54**	.55**	.38**	.26	.00	.15	.40**	.42**	.49**	.18	.05	.29**	.50**	.36**	.70**	.03	.20	.15	.67**	.61**	-											
22. IDInternational T1	4.49	1.37	.27**	.11	.08	.40**	.27*	.27*	.30**	.23	.16	.43**	.29*	.38**	-.00	-.12	.28*	.30**	.37**	.29*	.27**	.08	.25	-										
23. IDInternational T2	4.60	1.16	.21	.08	.14	.27**	.25**	.19	.31*	.10	.28*	.35**	.36**	.23	.05	-.01	.28*	-.03	.14	.16	.39**	.16	.26*	.65**	-									
24. IDInternational T3	4.39	1.25	.13	.12	.19*	.25	.18	.36**	.40**	.27*	.34**	.32*	.024	.47**	-.07	-.13	.21*	.24	.21	.40**	.19	.06	.21*	.46**	.64**	-								
25. PA T1	4.96	1.00	-.13	.12	.06	-.29**	-.16	-.23	.06	-.03	.18	-.22**	-.22	-.21	.12	.21	.00	.07	.01	.03	.21*	.26*	.07	-.10	-.12	-.00	-							
26. PA T2	4.95	0.96	-.12	.00	-.04	-.13	-.14	-.34**	-.04	.04	.21	-.25*	-.10	-.34**	-.07	.16	.02	-.04	.08	-.07	.21	.30**	-.00	.02	.12	.05	.67**	-						
27. PA T3	5.09	1.08	.08	.02	-.17	.20	.02	.06	.25	.05	.18	.15	.06	.03	-.03	.08	.17	.19	.09	.26	.19	.15	.28*	.39**	.30**	.42**	.64**	-						
28. SCA T1	4.69	0.90	.21*	.21	.15	-.07	.19	.01	.26**	.24	.26	.04	.11	-.13	.18*	.24	.05	.14	.16	.01	.29**	.27*	.03	.08	.12	.14	.47**	.26	.21	-				
29. SCA T2	4.88	0.91	-.01	.15	.17	-.05	.02	-.23	.02	.08	.26*	-.10	-.12	-.25	.02	.33**	.23	.05	.08	-.02	.13	.24**	.04	.09	.19*	.04	.39**	.47**	.30*	.64**	-			
30. SCA T3	5.11	0.99	.19	.23	.16	.11	-.03	.03	0.18	.15	.26**	.12	.07	-.01	.11	.29*	.35**	.14	.13	.03	.07	.17	.22*	.23	.24	.21*	.38**	.36**	.50**	.60**	.65**	-		
Gender			-.01	0	.04	-.11	.14	.02	-.08	-.02	-.09	-.01	.03	-.09	-.06	.03	-.04	.03	-.01	.07	.09	-.09	-.03	.01	.05	.01	.08	.00	-.18	-.02	-.03	-.17		
Age	22.19	3.18	-.24**	.05	-.09	-.20*	-.19*	-.19*	-.10	-.03	-.07	-.19*	-.14	-.09	.00	.11	-.08	-.02	-.02	-.23*	-.17	.08	.06	-.21*	-.10	-.29**	.04	-.00	-.01	-.20*	-.16	-.08		
Migration Experience			.22*	.05	.04	.19*	.02	.04	.14	-.07	.06	.18*	.08	.09	-.01	-.08	.00	.04	-.10	.20*	.16	-.16	-.07	.12	-.01	.08	.00	-.05	.01	.14	.00	.01		

Note: Due to missing data, N values at T1 ranged from 133 to 138, at T2 from 119 to 128, and at T3 from 109 to 112. SM = Social Media Usage Scale, ID = Social Identification Scale, PA = Psychological Adaptation Scale, SCA = Sociocultural Adaptation Scale.

* $p < .05$, ** $< .01$

Chapter III - Results

3.1. Longitudinal effects

Data were analyzed separately depending on the four target groups. Thus, four cross-lagged panel models were designed in MPlus7 (Muthén & Muthén, 1998-2015) based on the hypotheses of this study. To allow for a more parsimonious model, mean scores were firstly calculated with the items of each scale, and the result would refer to the score of a participant in each construct. These were the final data inputted in the model for subsequent analysis. *Social media usage* and *social identification* were defined as independent variables in order to analyze their influence in both the *psychological* and *sociocultural* adaptation (i.e. dependent variables) of participants. To control for the effects of time in the relationships of the variables, correlations were calculated among each variable (i.e. social media usage, social identification, psychological adaptation and sociocultural adaptation) within each time point. *Age*, *gender* and *previous migration experience* were included in the model as control variables by regressing all variables on them, in order to rule out their effect in the relationship between independent and outcome variables. Below, the results are displayed regarding the four target groups of this study. To test the hypotheses the model was inputted to address the effect of social media usage on social identification and cross-cultural adaptation across time, as well as the effect of social identification on social media usage and cross-cultural adaptation.

3.2. People from the home country (home nationals)

The model tested for social media usage and social identification that international students have with home nationals provided an adequate fit with the data ($\chi^2(28) = 61.265, p < .001$; CFI = .917; TLI = .698; RMSEA = .071, 90% CI [.05, .10]). Regarding the analysis of cross-lagged effects, there were no effects found from social identification on cross-cultural adaptation, nor from social media usage on social identification. These results prompted us to reject Hypothesis 1, which addresses the prediction of social identification on cross-cultural adaptation. In the same line, Hypothesis 5(a) was also rejected, since no effect was found from social media usage towards social identification.

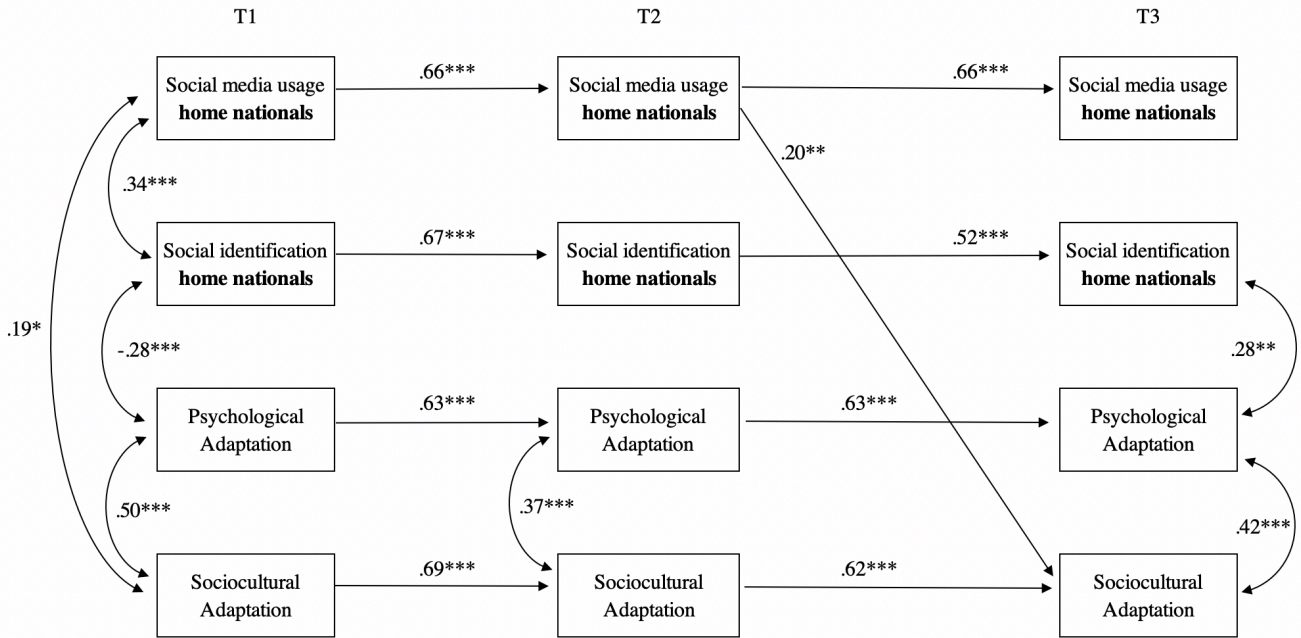


Figure 2. Cross-lagged panel model with three time points of the relationships between social media usage and social identification with home nationals, and psychological and sociocultural adaptation of international students.

Note: Only significant paths are shown (* $p < .05$; ** $p < .01$; *** $p < .001$). Results have been standardized and controlled for gender, age and previous migration experience. Model Fit: $\chi^2(28) = 61.265, p < .001$; CFI = .917; TLI = .698; RMSEA = .071; $N = 234$.

As Figure 2 portrays, the only significant lagged effect found was the one of social media on sociocultural adaptation ($\beta = .20$; $SE = .07$; $p = .006$). Thus, international students' social media usage with home nationals in T2 predicts positively their sociocultural adaptation in T3. An interesting finding was that the correlation that was found between social media usage and social identification in T1 ($r = .34, p < .001$) was no longer obtained in T2 and T3. Finally, another interesting result is that the correlation between social identification with home nationals and psychological adaptation was negative in T1 ($r = -.28, p < .001$), but during T3 this correlation was positive ($r = .28, p = .007$). This means that students that had higher social identification with home nationals experienced a lower psychological adaptation during T1, but students that in T3 had higher social identification experienced higher levels of psychological adaptation.

3.3. People from the home country living in the host country (local home nationals)

The cross-lagged model that contemplates the variables of social media usage and social identification of international students with local home nationals showed an adequate fit with the data ($\chi^2(28) = 62.431, p < .001$; CFI = .914; TLI = .688; RMSEA = .072, 90% CI [.05, .10]). Regarding the cross-lagged effects the results are mixed (see Figure 3). There were significant lagged effects of social identification with local home nationals on the cross-cultural adaptation, however these results changed in valence through time.

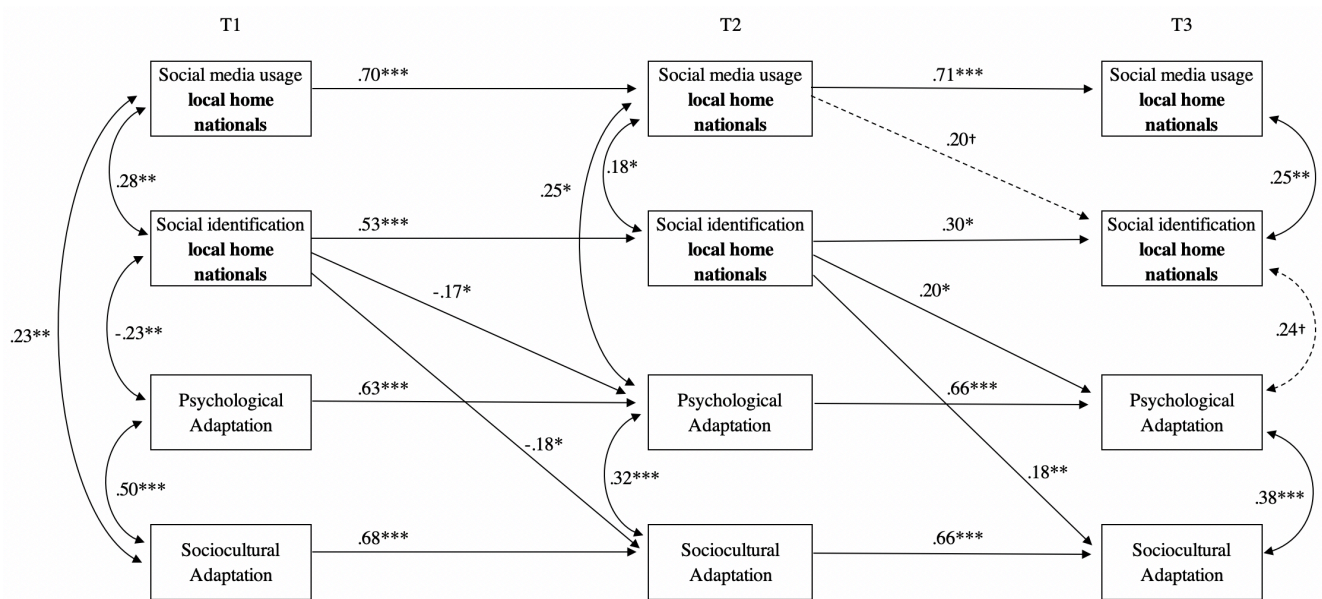


Figure 3. Cross-lagged panel model with three time points of the relationships between social media usage and social identification with local home nationals, and psychological and sociocultural adaptation of international students.

Note: Only significant and approaching significant paths are shown († $p < .07$; * $p < .05$; ** $p < .01$; *** $p < .001$) Results have been standardized and controlled for gender, age and previous migration experience. Model Fit: $\chi^2(28) = 62.431, p < .001$; CFI = .914; TLI = .688; RMSEA = .072; $N = 234$.

While social identification in T1 had a negative and significant effect on psychological adaptation ($\beta = -.17$; SE = .09; $p = .042$) and sociocultural adaptation ($\beta = -.18$; SE = .09; $p = .033$) in T2; this effect changed valence from T2 to T3. Hence, social identification in T2 had a significant and positive effect on psychological adaptation ($\beta = .20$; SE = .10; $p = .033$) and sociocultural adaptation ($\beta = .18$; SE = .07; $p = .009$) in T3. These results lead us to reject

Hypothesis 2 from T1 to T2, but to accept it from T2 to T3 as the predicted positive effects of social identification on both (a) psychological and (b) sociocultural adaptation were found only from T2 to T3. Thus, identification with local home nationals at T1 predicted a lower cross-cultural adaptation on T2, but identification with the same group on T2 predicted a higher cross-cultural adaptation on T3.

Regarding the effects of social media usage on social identification, there was one approaching significant effect found from T2 to T3 ($\beta = .20$; $SE = .11$; $p = .065$), hence the social media usage international students had in T2 with local home nationals, influenced the social identification they had with that group at a later time (i.e. T3). However, this effect is not significant, and the results do not allow us to accept Hypothesis 5(b). As with the previous group, no effect was found from social identification to social media usage. We did find however a positive correlation between social media usage and social identification at the three different time points ($r_{T1} = .28$, $p_{T1} < .001$; $r_{T2} = .18$, $p_{T2} = .044$; $r_{T3} = .24$, $p_{T3} = .005$).

Similar to the previous group, the results show that social identification with local home nationals was negatively correlated with psychological adaptation in T1 ($r = -.23$, $p = .005$), but this relationship was positive, although not significant, in T3 ($r = .24$, $p = .054$). Additionally, one interesting finding for this group is that while the effect that the variables had on themselves across time was stable and moderate for social media usage and cross-cultural adaptation variables, this was not the case for social identification. The predictive value of social identification on T1 to social identification in T2 ($\beta = .53$; $SE = .09$; $p < .001$), was greater than the latter on social identification on T3 ($\beta = .30$; $SE = .13$; $p = .015$).

3.4. People from the host country (host nationals)

The cross-lagged model of the relationship between social media usage and social identification that international students have with host nationals, and their influence on cross-cultural adaptation showed a good fit with the data ($\chi^2(28) = 38.863$, $p = .083$; $CFI = .967$; $TLI = .880$; $RMSEA = .041$, 90% CI [.00, .07]). There was no effect found from social identification to either psychological or sociocultural adaptation, which prompted us to reject Hypothesis 3. When looking at the cross-lagged effects between social media usage and social identification, there are mixed results. As portrayed in Figure 4, social media usage in T1 had a positive lagged effect on

social identification on T2 ($\beta = .25$; $SE = .10$; $p = .009$); however, this effect was negative from T2 to T3 ($\beta = -.19$; $SE = .10$; $p = .043$). Thus, social media usage of international students related to host nationals in T1 increased their social identification with that group in T2, but the social media usage in T2 lead to a lower identification in T3. These results support Hypothesis 5(c) from T1 to T2 but reject it from T2 to T3.

Contrary to our expectations, there was a significant effect of social identification in T2 to social media usage in T3 ($\beta = .20$; $SE = .10$; $p = .045$). Thus, even though the results showed that there is a longitudinal and positive effect of social media usage on social identification, social identification that international students had in T2 led them to increase their social media usage with host nationals in T3. An interesting finding, that was not found in the other groups, is that social media usage during the three time points was significantly and positively correlated with sociocultural adaptation ($r_{T1} = .18$, $p = .028$; $r_{T2} = .41$, $p < .001$; $r_{T3} = .22$, $p = .048$).

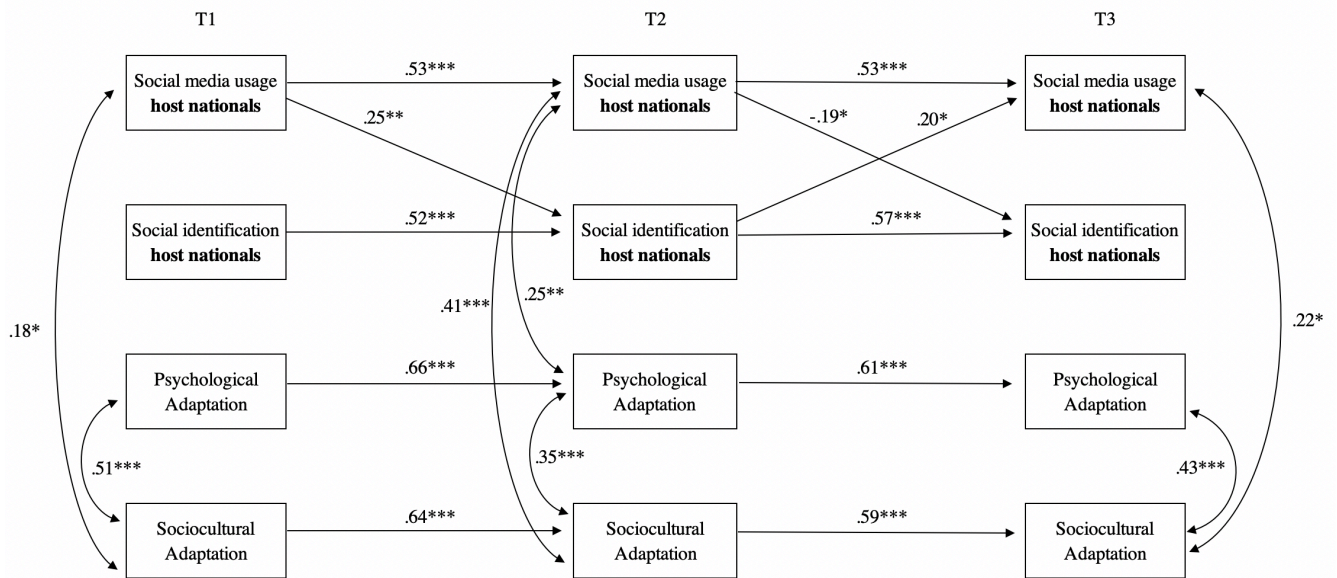


Figure 4. Cross-lagged panel model with three time points of the relationships between social media contact and social identification with host nationals, and psychological and sociocultural adaptation of international students.

Note: Only significant paths are shown ($*p < .05$; $**p < .01$; $***p < .001$). Results have been standardized and controlled for gender, age and previous migration experience. Model Fit: $\chi^2(28) = 38.863$, $p = .083$; CFI = .967; TLI = .880; RMSEA = .041; $N = 234$.

3.5. International students

The cross-lagged model tested for social media usage and social identification that international students have with other international students showed a good fit with the data ($\chi^2(28) = 48.378, p = .010$; CFI = .948; TLI = .812; RMSEA = .056, 90% CI [.03, .08]). In this case (see Figure 5), social identification in T2 had a positive and longitudinal effect on both (a) psychological adaptation ($\beta = .36$; SE = .10; $p < .001$) and (b) sociocultural adaptation ($\beta = .19$; SE = .07; $p = .011$) on T3, is worth mentioning that this effect was larger on psychological adaptation than on sociocultural adaptation. The results allowed us to support Hypothesis 4. This means that the identification with other international students led towards a higher cross-cultural adaptation in general.

As expected, the cross-lagged effects were visible in the model as the hypotheses stated. Social media usage in T1 had a longitudinal and positive effect on social identification in T2 ($\beta = .23$; SE = .09; $p = .013$), and there were no reverse effects from social identification on social media usage, which prompted us to support Hypothesis 5(d). Thus, international students who engage in social media usage with other international students increased their social identification towards that group.

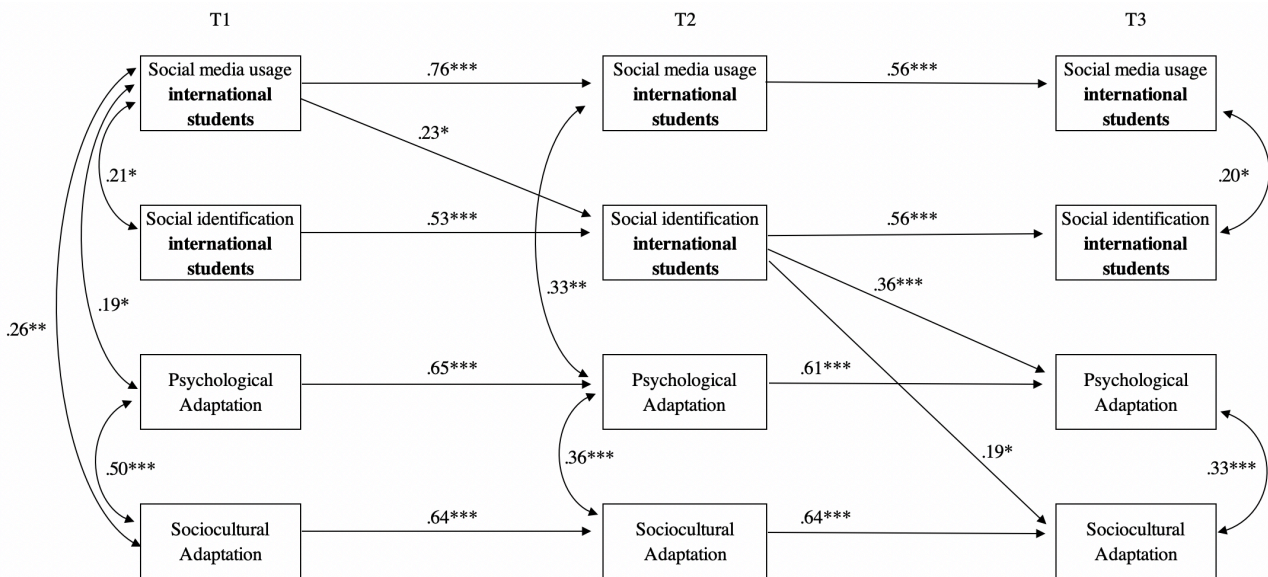


Figure 5. Cross-lagged panel model with three time points of the relationships between social media contact and social identification with other international students in the host country, and psychological and sociocultural adaptation.

Note: Only significant paths are shown ($*p < .05$; $**p < .01$; $***p < .001$). Results have been standardized and controlled for gender, age and previous migration experience. Model Fit: $\chi^2(28) = 48.378, p = .010$; CFI = .948; TLI = .812; RMSEA = .056; $N = 234$

Chapter IV - Discussion

When exploring the effects that social media have in acculturation, several studies have tended to focus on the role that they have in keeping communication with family and friends back in the home country as a way to maintain their cultural identity (e.g. Cemalcilar et al., 2005; Park & Noh, 2018); and some others have also included the role that they have in communicating with people from the host country as a way to develop identification and participation with this group (e.g. Hofhuis et al., 2019). However, few studies have adopted a broader scheme to include other social groups, such as international students or co-nationals in the host country (e.g. Taušová, Bender, Dimitrova & van de Vijver, 2019). And even less studies have focused on the long-term implications of social media in the acculturation process (e.g. Hendrickson & Rosen, 2017).

With the aforementioned in mind, this study aims to contribute to extant literature by expanding the notion of groups international students identify with during their sojourn and by analyzing the role of social media usage on their cross-cultural adaptation. In a cross-lagged model we tested the influence that social media usage has on the social identification that international students hold with the four target groups: 1) home nationals, 2) local home nationals, 3) host nationals and 4) other international students. In turn, we examined the long-term influence of each social identification in their psychological and sociocultural adaptation.

Overall our results give evidence to understand the acculturation as a continuous but changing process that is affected by social media and the different social identifications that international students experience. Although causal effects of social media usage on identification were not found for all target groups, these factors were correlated across groups, indicating that social media are important resources in the development of identification patterns during the sojourn. Additionally, we also found that social media usage was related to sociocultural adaptation in all groups, which goes in line with existing literature that highlight the importance of media in acquiring necessary information to develop cultural skills (Sandel, 2014; Shuter, 2012).

When focusing on each of the target groups we found some important differences. For the case of home nationals and local home nationals, we found that social identification in the beginning of the sojourn negatively predicted the adaptation of international students, but this

effect turned positive as students spent more time in their host societies. On the other hand, in the case of host nationals, the effects of social media were contradicting as we found that media influenced positively the identification with this group in the beginning of the sojourn, but this influenced turned negative at a later time. Finally, for the case of other international students, we found, as expected, a longitudinal effect from social media usage to social identification, and from the latter to both psychological and sociocultural adaptation.

In sum, our results suggest that identifying with home nationals might hinder the adaptation in the beginning of the sojourn, but as time passes this same feeling of belonging to the group of home nationals can actually benefit the adaptation of international students. On the other hand, the group of host nationals appears to be relevant in all phases of the sojourn, as media usage with this group aids the sociocultural adaptation across time. Lastly, the group of other international students seems to be the best predictor of both psychological and sociocultural adaptation, highlighting the importance of shared experiences during the international experience.

4.1. Social identification and cross-cultural adaptation

The results of this study show that social identification processes that relate to local home nationals and other international students play an important and direct role in the cross-cultural adaptation of international students as they had longitudinal effects. Although we expected that all groups would have a direct longitudinal effect on cross-cultural adaptation, these results are not surprising if we consider that both local home nationals and other international students are the two groups that are most likely to share similar experiences with participants. Previous studies that have explored the role of social identification as a coping resource in international students have found that it is rather the proximity and the sharing of experiences that allow for the benefits of social identification to take place during the acculturation experience (Bierwiazzonek et al., 2017), which occurs as sojourners develop their social identifications in response to their intergroup context (Schmitt et al., 2003). This said, is also important to acknowledge that depending on the phase of the sojourn, the social identification patterns can either hinder or aid the adaptation process even if they come from the same group. This discrepancy was found in the group of home nationals and local home nationals and thus need further discussion.

The social identification that international students had with home nationals was negatively correlated to their psychological adaptation during the first wave of the study, but in the last wave this relationship turned positive; the same pattern was found for the social identification with the local group of home nationals. Regarding the group of local home nationals, the results are even more comprehensive as it was found that social identification with this group in the first wave of the study had a negative impact on both the psychological and sociocultural adaptation of international students in the second wave. However, the same identification pattern in the second wave influenced in a positive manner the psychological and sociocultural adaptation at a later time. In sum, we see that international students that have greater identification with home nationals (both local and in the home country) in the beginning of the sojourn, experience poorer adaptation. However, as time passes, greater identification with the same groups leads to a better adaptation. These results can be explained when we consider that the needs of international students change throughout their sojourn (Beech, 2018).

For example, the negative effect of social identification on the cross-cultural adaptation in the beginning of the semester, which goes in line with what previous studies have found (Ward et al., 2001), can be related to the feelings of loneliness that are exacerbated in the beginning of the sojourn due to a loss of networks in a new cultural environment (Sawir et al., 2008). Hence, to cope with these feelings of homesickness and trying to fulfill the needs of connectedness, students might be eager to find ties with home nationals (e.g. Collins, 2010) who usually are more readily available compared to other groups (Cachia & Jariego, 2018) but that in turn can discourage integration (e.g. Mikal, Yang & Lewis, 2014). Additionally, people from the home country might not have the same knowledge as people from the host country that is necessary to successfully adapt (e.g. Rui & Wang, 2015), which might lead international students to experience a poor adaptation (e.g. Geeraert et al., 2014). However, as international students meet their needs in the first stages of their acculturation process, the social identification they have with fellow home nationals might no longer be affected by negative feelings of isolation. They also meet new social networks in the host country that can aid during the acculturation process (e.g. Robertson, 2018) and that not necessarily substitute the positive effects that identification with home nationals can have in their adaptation (Sakurai, McCall-Wolf & Kashima, 2010).

Finally, although international students might benefit from contact with host nationals, our results show that the social identification processes might not be as crucial as with other

groups for their cross-cultural adaptation. Even though previous research has found that higher host national identification leads towards a better cross-cultural adaptation of sojourners in general (e.g. Cemalciar et al., 2005; Geeraert & Demoulin, 2013; Ward & Kennedy, 1994), our findings show no effects or correlations between host national identification and the cross-cultural adaptation of international students. It was also found that identification with this group was the lowest when compared to home nationals and other international students. On one hand, these results suggest that there might be a lack of significant contact between international students and people from the host country (Sigalas, 2010), where institutional factors, such as different housing styles or different courses in university play an important role as they limit the development of host national ties (Fincher & Shaw, 2011). On the other hand, taken together our previous results with the group of local home nationals and other international students, we argue that students might also be motivated to actively look for social ties that do not include host nationals as others might represent a more important source of support (e.g. Beech, 2018) and enhance a greater feeling of belonging (Schartner, 2015; Savicki, 2010). Lastly, another important factor to consider is that the nature of the short-term mobility can keep international students from developing a social identification with host nationals that is strong enough to influence significantly their adaptation process. This temporality might restrict access to essential host national capital as host nationals are usually settled in their countries and hold different interests. Also, students might find the investment in host national groups less efficient for their short-term experience (Ward et al., 2001).

Taken together, these results indicate that during their sojourn, international students might build many experiences that are not constantly related to people from the host country but that still bring about resources to adapt and maintain a healthy well-being. In sum, the fact that the identification with the group of international students leads towards a successful adaptation, similar to the identification with local home nationals, highlights that group membership and feelings of belonging to social networks that reside in the host country is an important factor towards achieving adaptation in an intercultural context (Schmitt et al., 2003; Taušová et al., 2019). Although all groups are important in the process of acculturation, the group of international students, as the most present in other international students' lives contributes largely to making the acculturation experience successful, especially because they allow for a stronger

sense of belonging that is nurtured out of shared experiences (Bierwiazzonek et al., 2017; Gomes et al., 2014; Kashima & Loh, 2016; Taušová et al., 2019).

4.2. Social media usage and cross-cultural adaptation

Social media have an important role in the adaptation of international students as they have allowed them to shorten the distance from their home countries, as well as to broaden the opportunities of contact within the host country. Our results show that social media and sociocultural adaptation are interrelated, especially in the case of social media usage with host nationals. This is aligned with previous studies (e.g. Dalisay, 2012; Li & Tsai, 2015) that highlight the culture learning properties of social media as they make accessible relevant cultural information and practices, such as behaviors and norms that are necessary for a successful sociocultural adaptation. Since there were no causal effects of social media usage on cross-cultural adaptation (with the exception of social media related to home nationals), is important to acknowledge that this resource by itself cannot aid during the acculturation process (e.g. Damian & Van Ingen, 2014; Rui & Wang, 2015). For example, social media might provide explicit norms, but for implicit norms that are not as easily available, sojourners must come in direct contact with people from the host country (Bierwiazzonek & Waldzus, 2016). In this study we proposed that the mechanism through which social media can aid in the acculturation process is through the enhancement of social identification with the groups international students communicate with. Our results are mixed and provide insights into the dynamic relationship between social media and social identification.

We found that social media usage with the four target groups is positively related to the social identification with those groups; which showcase that international students that engage in social media with a specific group tend to have a greater identification towards that group. This is expected as social media enable communication and spaces for intercultural exchange (Hendrickson & Rosen, 2017; MccPhail & Fisher, 2015; Shuter, 2012) that can extend or simulate the offline lives of users (Cohen, 2017). Thus, as international students construct their social identifications in response to an intergroup context that is relevant during their sojourn (Schmitt et al., 2003), we argue that social media could provide the means to facilitate this process. Although these processes might occur in a parallel fashion, our longitudinal results

suggest that depending on the group, social media can have a direct influence in the development of social identification.

We found that social media usage of international students with host nationals and other internationals students increased their respective social identification in the long-term, however no longitudinal effects were found for the groups of home nationals and local home nationals. Although these results might seem conflicting, they can be explained by considering the role that social media has in creating and expanding social networks (e.g. Ellison et al., 2007; Sleeman et al., 2016). Hence, it is possible that social media usage may have a greater effect on identification patterns, when connected to outgroup ties rather than ingroup ones (e.g. Damian & Van Ingen, 2014; Sawyer, 2012). This is related to the fact that the groups of home nationals share cultural values and qualities with international students that have a pre-sojourn origin. Therefore, the results suggest that social media can have greater power to enhance a social identification that is built towards groups that do not share a past history or qualities that are inherent to the culture of origin, in this case host nationals and other international students.

Regarding the use of social media usage with host nationals, the results are mixed. In sum, social media usage in the beginning of the study led towards a higher social identification in the middle wave of the study; but this effect was negative at a later time. Unexpectedly, we also found that social identification with host nationals in the middle wave of the study increased the social media usage with that group at a later time. These results indicate that there is a dynamic relationship between social media and social identification with host nationals through time. When international students arrive to their host country, they engage in expanding their social networks in order to find resources that help them navigate a new cultural environment. Studies have found that in the beginning of a sojourn, social media come in handy in this process as they provide new social capital in a rapid and effective way that can elicit feelings of belonging (e.g. Damian & Van Ingen, 2014), and they also provide information that brings the sojourner closer to the host culture (e.g. Dalisay, 2012).

Moreover, if international students succeed at developing a strong social identification with host nationals and a sense of belonging, they might invest more time on social media as a way of maintaining their interest in the host culture and their meaningful social networks (e.g. Ellison et al., 2007). On the other hand, students may fail or have no interest in developing a

sense of belonging with host nationals due to discrimination experiences (e.g. Berry et al., 2006; Schmitt et al., 2003) or lack of face-to-face interactions (e.g. Hendrickson & Rosen, 2017; Lin et al., 2011). If this is the case, then using social media related to this group might elicit negative feelings such as stress that can lead towards feelings of disconnectedness (e.g. Yu, Foroudi & Gupta, in press). Furthermore, investing more time on the context of social media platforms might also impair social identification processes. For example, international students that rely more on social media can experience feelings of being ignored by host nationals if there is no interpersonal exchange (i.e. likes, comments, event invitations, etc.) (Billedo, 2019), which can lead towards a lower social identification with that group.

Finally, as previously stated, is important to consider that international students might be more interested in consolidating ties with groups that are more relevant for their experience (Beech, 2018). According to the results, the most important group is the one of other international students. As expected, the results showed that social media usage with this group in the beginning of the sojourn increased the social identification at a later time; which in turn influenced positively the cross-cultural adaptation of international students. Thus, for the group of international students our findings suggest that social media provide resources that allow not only for the formation of new social ties, but also for the construction of social identification with this group. As previously stated, this group represents one of the most important resources for international students as they share similar experiences during the acculturation process that bring them closer together and foster a sense of belonging that can last through time (e.g. Bierwiazzonek et al., 2017; Schartner, 2015).

4.3. Limitations and Future directions

To have a better understanding of the context of the study, there are several limitations that need to be discussed. First, the length of the questionnaires that participants had to respond to in order to provide information on four different groups could have led to the high dropout rate reported in the study. To account for this attrition, we recurred to maximum likelihood as a way to calculate results as if the data were complete. While this procedure has been long established and recommended (Graham, 2009), it is known that it performs best when data is at least missing at random which, in the case of attrition in longitudinal designs, cannot be guaranteed (Schafer &

Graham, 2002). Thus, we cannot exclude that our results bear some bias. Future longitudinal studies in the acculturation field, should take into account a parsimonious design that will not require much time investment from the participant in order to maintain a higher rate of participants and provide more accurate results (Hoerger, 2010). Another limitation is that the data collection period of each wave during the study lasted for about four weeks. And even though the majority responded during the first two weeks, the difference in experiences and behaviors between and within students could have been significant. This could also be considered as a shortcoming of the length of the questionnaire, since several reminders were sent in order to keep participants that were not engaging in the first week of the waves.

In regard to the measurement of social media usage, three important limitations are worth mentioning. First, the scale that was used did not differentiate media richness, there were even some items that had statements including different levels of media richness. As studies have found that this is an important factor that influences how sojourners communicate with different cultural groups (e.g. Lee & Katz, 2015; McKelvy & Chatterje, 2017) efforts should be made to address media richness in future research. Second, the scale did not differentiate between active or passive engagement of social media, and this can alter the identification patterns. For instance, self-disclosure and an active use of social media could increase well-being and communication with different social groups during the acculturation process (e.g. Mitra & Evansluong, in press), but provoke fear of missing out in people that are back in the home country (e.g. Hetz, Dawson & Cullen, 2015).

Third, the study did not address difference in social media platforms. International students can use social media for different reasons: to make friends, communicate, search for opportunities, learn, entertain themselves or even entertain others. Thus, future research can benefit from studying specific social media platforms such as YouTube, LinkedIn, Facebook, Tinder, WhatsApp and others, in order to better understand the different ways social media can impact the acculturation process and explain what are the most beneficial for international students. Despite the important limitations aforementioned, the inclusion of the role of social media usage in cross-cultural adaptation in this study is one important step towards filling the knowledge gap of how technology and media influence social and psychological processes during the sojourn experience.

4.4. Conclusion

The findings of this study suggest that international students use social media related to their fellow home nationals, but also to different groups they interact with during their sojourn. Social media usage in turn can foster a sense of belonging or social identification with those groups that during the acculturation experience can be a valuable coping resource. As international students transition into their new cultural environment, they can learn and relate more from the people that are surrounding their immediate contexts. In this line we found that the influence of social media on identification was stronger for host nationals and other international students. Finally, we also found that the relationships between these aspects and cross-cultural adaptation can change through time and depending on the groups international students interact with.

Taking the results into account, two recommendations are made. First, university staff and authorities involved in the process of student mobility should promote the use of social media among international students. For instance, next to introductory activities aimed at welcoming international students, they should provide important links (e.g. Facebook groups of international students or expats in the host city) that can offer informational social support if needed. They should also encourage students to remain in virtual contact with those that are experiencing similar situations as them (i.e. other international students or migrants), as they can be a strong source of support to face the unavoidable challenges they will encounter during their international experience. Additionally, university staff could encourage host national students to engage in more social media platforms with international students or provide spaces to do it (e.g. create a virtual group with all participants -local and international- from one class).

Finally, we encourage researchers in the acculturation field to address the different groups that can impact international students' lives, which are broader than home and host nationals. Furthermore, future studies should explore more longitudinal analysis or experiments (e.g. Li & Liu, 2017; Lim & Pham, 2016) and the role of social media in acculturation studies, as this might provide a better panoramic of the contemporary migration experience that is highly affected by technology and new media communication.

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Appendix A - Scales

Social Media Usage

How often do you perform the following activities on digital media, with (GROUP)?

1 = Never
7 = Very often

	1	2	3	4	5	6	7
Browsing Profiles							
Interacting with profiles (tagging, posting, sharing, etc.)							
Private or group text chat							
Private or group voice/video call							
Keeping up to date with events (creating, inviting, being invited)							
Reading or discussing news							
Finding/friending new people to interact with							
Browsing online groups and communities							
Interacting with online groups and communities							

Social Identification

To answer the following questions, think about (GROUP)

1 = Strongly disagree
7 = Strongly agree

	1	2	3	4	5	6	7
When someone criticizes (group), it feels like a personal insult.							
I'm very interested in what others think about (group).							
When I talk about (group), I usually say 'we' rather than 'they'.							
When someone praises (group), it feels like a personal compliment.							
If a story in the media criticized (group), I would feel embarrassed.							
The characteristics associated with (group) also apply to me.							

Psychological Adaptation

Thinking about living in your host country. In the last 2 weeks, how often have you felt...?

1 = Never
7 = Very often

	1	2	3	4	5	6	7
Excited about being in the host country.							
Out of place, like you don't fit into the host country's culture. *							
A sense of freedom being away from your home country.							
Sad to be away from your home country. *							
Nervous about how to behave in certain situations. *							
Lonely without your family and friends from your home country around you. *							
Curious about things that are different in the host country.							
Homesick when you think of your home country. *							
Frustrated by difficulties adapting to the host country. *							
Happy with your day-to-day life in the host country.							

*Reversed items

Sociocultural Adaptation

Thinking about life in your host country, please rate your competence at each of the following behaviors

1 = Not at all competent
7 = Extremely competent

	1	2	3	4	5	6	7
Building and maintaining relationships.							
Obtaining community services I require							
Understanding and speaking the host country's language.							
Interacting at social events.							
Attending or participating in community activities.							
Finding my way around.							
Accurately interpreting and responding to other people's emotions.							
Dealing with the bureaucracy.							
Adapting to the pace of life.							