A Longitudinal Study of the Effects of Discrimination on the Acculturation Strategies of International Students

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Abstract

The current study investigated the impact of discrimination on the acculturation strategies of international students in the U.K. In a longitudinal study that followed students ($N = 113$) for one year, the authors drew on social identity theory to understand the processes by which discrimination impacts on their acculturation strategies. Specifically, the study examined an indirect effect by which perceived discrimination impacts acculturation strategies through perceived permeability of group boundaries. Results showed that perceiving discrimination is associated with a perceived lack of permeability, which in turn results in avoiding the host society and simultaneously endorsing one's own cultural background. Implications for international students and other cultural groups are discussed.

(Word count: 109)

Keywords: Perceived discrimination, acculturation strategies, social identity theory, permeability of group boundaries.

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International Students

With changes in the global economy and increased availability of communication and transportation networks, the number of international students has dramatically increased over the last decades. This is supported by data showing that in 1990 there were 1 million international students all over the world, a number that exponentially increased to 3 million in 2007 (OECD, 2009). It is estimated that more and more students will seek international experience and there will be a total of 7.2 million international students in the year of 2025 (Bohm, Davis, Meares, & Pearce, 2002).

For these students moving abroad provides a cross-cultural opportunity with tangible benefits for themselves and their host institutions. For students, this opportunity broadens their perspectives and promotes professional, academic, and personal growth, whilst providing the understanding of another world-view (Andrade, 2006; Furnham & Bochner, 1986; McClure, 2007). For hosts, international students are an extremely valuable asset as they contribute academically, culturally, and financially to universities and also host countries (Burslem, 2004). In the UK, for example, it is estimated that their presence contributes with £12.5 billion per year to the British economy (British Council, 2008), a figure that exceeds the profits generated by significant export industries such as alcoholic drinks, textiles, and cultural and media industries (Vickers & Bekhradnia, 2007).

Nonetheless, these benefits are associated with important costs for international students. Apart from being often stereotyped as handicapped, bewildered, and lacking English language ability and familiarity with the education system (Mestenhauser, 1983; Paige, 1990; Pedersen, 1991), they also face other negative stereotypes associated with their ethnicity and cultural background (Lee & Rice, 2007; Spencer-Rodgers, 2001). In this context they are often targets of racism (Yoon & Portman, 2004), face several other forms of

discrimination (Bonazzo & Wong, 2007; Lee & Rice, 2007; Schmitt, Spears, & Branscombe, 2003; Sherry, Thomas, & Chui, 2010; Ward, Bochner, & Furnham, 2001; Yeh & Inose, 2003), and are also victims of exclusion, isolation, and unfriendliness from domestic students (Gu, Schweisfurth, & Day, 2010; Wang, Singh, Bird, & Ives, 2008). In the present research we focused on these perceptions. Indeed, experiences with discrimination are critical for acculturating individuals given that they are one of the most harmful acculturative strains endured by cultural minorities (Berry & Sabatier, 2010; Jasinskaja-Lahti, Liebkind, Horenczyk, & Schmitz, 2003; Jasinskaja-Lahti, Liebkind, Jaakkola, & Reuter, 2006) and also because they impact on how individuals decide to acculturate and approach the host communities (e.g., Berry, Phinney, Sam, & Vedder, 2006; Berry & Sabatier, 2010; Jasinskaja-Lahti et al., 2003; van Oudenhoven, Ward, & Masgoret, 2006).

We aimed to explore the latter two points by focusing specifically on the impact of international students' experiences with discrimination on the formation of their acculturation strategies. With a longitudinal study we aimed to extend on previous research by examining the causal direction between perceived discrimination and acculturation strategies. Furthermore, we followed a social identity approach (Haslam, 2004; Tajfel, 1978; Tajfel & Turner, 1979) in order to elucidate the processes by which perceived discrimination might impact acculturation strategies. Specifically, we examined the role of perceived permeability (i.e., the extent to which students perceive that the boundaries between their group and the host group are permeable) in explaining the effects of discrimination on acculturation strategies.

The Impact of Perceived Discrimination on Acculturation Strategies

An established body of research has examined how perceived discrimination impacts on the way in which individuals acculturate to a new society (for a review, see van Oudenhoven, Ward, & Masgoret, 2006). In previous work the effects of discrimination on

acculturation strategies have been discussed in light of the phenomenon of *reciprocity* (Kalin & Berry, 1996). This suggests that when minorities face discrimination, they respond by adopting acculturation strategies that convey distance from the host society. Indeed, it is more difficult for acculturating individuals to successfully integrate or assimilate under conditions of rejection (Verkuyten & Yildiz, 2007). This is also consistent with evidence that minorities tend to avoid contact with dominant groups when they expect negative treatment and discrimination (Hewstone & Swart, 2011) and that rejection reduces pro-social behaviour (Twenge & Baumeister, 2005). Along these lines, Berry and colleagues (2006) showed that in the face of discrimination, young immigrants tend to reject the dominant culture and are more likely to embrace their own ethnic background. These findings are also supported by other work showing that perceiving discrimination is associated with a preference for separation and marginalisation strategies (Barry & Grilo, 2003; Berry & Sabatier, 2010).

Yet, despite important theoretical advances, these studies have produced a number of discrepant findings. For example, with a sample of immigrants in France, Berry and Sabatier (2010) found that perceived discrimination was associated with separation and marginalisation. However, this effect was not significant within the authors' sample of immigrants in Montreal. Conversely, Badea, Jetten, Iyer, and Er-Rafiy (2011, Study 1) found that perceived discrimination from the host society was negatively associated with assimilation and integration strategies. There were, however, no significant relationships between discrimination and the strategies of separation and marginalisation. Furthermore, other research has failed to find significant correlations between perceived discrimination and acculturation strategies (e.g., Juang & Cookston, 2009).

In the present work we argue that this inconsistent pattern of research findings reflects a limited analysis of the psychological processes involved in acculturation. In this, our argument is aligned with the perspective of Badea and colleagues (2011) who note that it is

crucial to account for relevant variables to fully explain the formation of acculturation strategies in the face of discrimination. More specifically, the extant cross-cultural literature has typically adopted a perspective focusing directly on the relationship between discrimination and specific acculturation strategies of a number of groups (e.g., immigrant youth; Berry et al., 2006). As such, this perspective has the limitation of not considering the group processes and social context in which discrimination is embedded (see for a similar argument, Reynolds & Turner, 2001). In contrast to previous work we argue that discrimination is a product of a complex set of group relations that cannot be systemised into an analysis of isolated individuals or groups. Thus, to elucidate the processes by which discrimination shapes acculturation strategies we drew upon social identification theory (SIT; Tajfel, 1978; Tajfel & Turner, 1979) having the advantage of accounting for the contextual societal factors that are vital for the processes of discrimination to unfold. This theory notes that the intergroup context is a determining factor of individuals' cognition and behaviour (Tajfel, 1978) and has been widely employed in the understanding of intergroup discrimination (Phinney, 1990). This approach has also proved to be fruitful for studying the adaptation of international students to a new culture (Terry, Pelly, Lalonde, & Smith, 2006).

Drawing on SIT, we propose that perceived discrimination should affect one's perceptions of the prevailing intergroup context and, through this, impact on the commitment of international students to their own and host groups. In other words, we argue that intergroup variables such as the perceived permeability of group boundaries should be the mechanism by which perceived discrimination impacts on acculturation strategies.

The Role of Permeability in Explaining the Effects of Perceived Discrimination

For social identity theory there are three important socio-structural variables that determine a person's perceptions of the prevailing intergroup context: permeability, stability, and legitimacy (Tajfel & Turner, 1979). *Permeability* relates to one's subjective belief that it

is possible for individuals to act as independent agents who can move between groups within a given social system. Whilst s*tability* refers to one's sense of the degree to which status relations between groups are fixed and unlikely change, *legitimacy* refers to one's sense that those relations are fair and reasonable. In the present research we propose that discrimination is a significant barrier capable of exerting a powerful impact on perceptions of permeability. We already know from a wealth of previous research that responses to a disadvantaged ingroup position depend on perceptions of this intergroup context (Tajfel, 1978; Tajfel & Turner, 1979; see Ellemers, 1993; Ellemers & Haslam, 2012). Thus, in a context of discrimination, the ways in which minority group members perceive the intergroup context should affect how they respond to their discrimination. Most particularly, it should guide their sense of how they would like relate to other groups in society and also guide them in how they would perceive and interact with their own group.

In line with our argument, research informed by SIT has shown that when minority group members are discriminated against by the majority, the separateness of groups and impermeability of boundaries becomes particularly salient (Tajfel, 1978). In turn, when boundaries between groups are perceived to be impermeable, identification with the ingroup increases (Ellemers, 1993; Ellemers, van Knippenberg, de Vries, & Wilke, 1988; Ellemers, van Knippenberg, & Wilke, 1990). Evidence of this sequence of effects is found in programmatic research by Branscombe and colleagues (1999) which has shown that minority group members increase identification with their ingroup in the face of discrimination. Although their research did not test this idea, it was argued that minority group identification increased because discrimination increases victims' sense that group boundaries are impermeable.

Given that both group identification and acculturation strategies reflect commitment to particular groups, we note that the processes above should operate in a similar way in

shaping acculturation strategies. More specifically, we propose that perceiving discrimination should be associated with group boundaries being perceived as relatively impermeable, which in turn should result in a greater endorsement of strategies that support the maintenance of one's own culture. Furthermore, when boundaries between groups are seen as impermeable, individuals are more likely to remain apart from the host society (Piontkowski, Florack, & Hoelker, 2000), and this may also encourage strategies consonant with avoidance of the host society.

Although previous research allows to hypothesise about the role of permeability within these processes, less is known about how the other socio-structural variables (i.e., stability and legitimacy) might relate to perceived discrimination and acculturation strategies. Previous research has shown that within the context of identity management, perceived stability and legitimacy interact with permeability to predict identification with different groups (Verkuyten & Reijerse, 2008). For this reason, in our analysis we included stability and legitimacy to test for this possibility and to also examine their relationship with discrimination and acculturation strategies. Given the lack of research in this topic, we did not develop specific hypotheses and preferred to adopt an exploratory approach.

Current Research

The present research used a longitudinal approach where international students in the U.K. were followed for a period of one year. International students' levels of perceived discrimination, perceived permeability, stability, and legitimacy, and acculturation strategies were assessed in their first years of studies and then again one year after. Beyond being the first research exploring the impact of discrimination on acculturation strategies within a social identity framework, our research also introduced some novel methodological aspects. First, our argument thus far has reflected the common belief in the literature that perceived discrimination determines acculturation strategies. Nonetheless, it is important to explore the

issue of causality given that research has alluded to the opposite causal sequence whereby acculturation strategies may affect levels of perceived discrimination (e.g., Jasinskaja-Lahti et al., 2003; Jung, Hecht, & Wadsworth, 2007). Although both causal sequences might be at play, extant work has not isolated these through use of appropriate methods. The present longitudinal study will serve to shed more light on our understanding of causality between the variables above.

Second, whilst prior research has typically focused on the relationship between discrimination and the four acculturation strategies (assimilation, integration, marginalisation, and separation) individually (e.g., Berry et al., 2006), in this research we examined acculturation strategies in light of the two dimensions specified in Berry's bidimensional model of acculturation (i.e., participation in the host society and own culture maintenance). This strategy should allow us analysing the impact of discrimination on strategies towards the host and minority groups separately. This is particularly important given that opposing effects might be observed on both dimensions and would be difficult to disentangle when the four acculturation strategies are measured individually. This strategy is also preferable in light of recent evidence that independent measurement of the two dimensions has greater predictive power (Benet-Martínez, 2010).

Finally, there has been a recent wealth of research focusing on international students and the impact of a number of acculturative stressors on their adaptation and well-being (Jackson, Ray, & Bybell, 2013; Yakunina, Weigold, Weigold, Hercegovac, & Elsayed, 2013; for a review, see Smith & Khawaja, 2011). Work with international students has too recognised the importance of a longitudinal approach for examining their psychological adjustment (e.g., Sakurai, McCall-Wolf, & Kashima, 2010), well-being, and social and academic adaptation (Cemalcilar & Falbo, 2008). Research focusing specifically on discrimination has demonstrated its pervasiveness and presence in multiple contexts (e.g.,

students can be discriminated against by the host community, Yoon & Portman, 2004; and also by domestic students, Gu et al., 2010). Yet, its impact on the acculturation strategies of international students has never been analysed and the present study is the first to examine this empirical question.

We propose an indirect effects model where it is predicted that perceived discrimination would impact acculturation strategies through perceived permeability of group boundaries. More specifically, it is anticipated that international students' perceptions of discrimination (T1) should be associated with lower perceived permeability of group boundaries (T1). In line with social identity theory, it is predicted that these perceptions should result, in turn, in a greater endorsement of participants' own cultural group (T2) and a withdrawal from participation in the host society (T2). No specific hypothesis were developed for the role of stability and legitimacy. In the analyses below we compared a number of models that are specified in greater detail when reporting the longitudinal study.

Method

Participants

A total of 160 international students who were in their first year of undergraduate studies and had English as a foreign language participated in the study. The analysis we present here focuses on data obtained from 113 students who participated in the two phases of the study (a retention rate of 72%). These students were from 32 different countries[1] and were recruited from seven universities in the U.K.[2] This final sample comprised a total of 113 participants (49 males and 64 females) and their ages ranged from 18 to 30 years old (M = 21). At the time they completed the study, they had been living in the U.K. for 2 years (M = 24 months; SD = 12.1). The most common academic subjects were Economics (representing 21% of the total sample), Psychology (12%), International Relations (11%), Medicine (11%), and Biology (7%) (for more details about the sample see Table 1).

Procedure

First-year international students were recruited through adverts placed around each university and also through each university's International Students Support Services. Those who were interested in taking part in the research were contacted by email or telephone. Students were met individually and the researcher presented himself as a fellow international student. It was communicated to all participants that they were taking part in a two-stage questionnaire study about "international students' perceptions of British culture and how they feel about studying in the UK". This was part of a larger research project and the questionnaire booklet distributed to all students had other measures that are not relevant for the present work and were not reported here. A first questionnaire booklet was distributed four months after their arrival into the country to allow them to develop their acculturation strategies and perceptions of discrimination. After responding to the T1 questionnaire a code was attributed to each participant so that they could be paired with their T2 responses one year later. Students were thanked for their participation and were paid £8 for completing both questionnaire booklets.

Measures

International students' acculturation strategies and perceived socio-structural variables were assessed with single scales. Perceived discrimination was assessed with an approach developed by Branscombe and colleagues (e.g., Branscombe et al., 1998; Schmitt, Branscombe, Kobrynowicz, & Owen, 2002) whereby different dimensions of discrimination are assessed and factored together using structural equation modelling techniques. Compared to previous research in this topic (e.g., Berry et al., 2006), the approach adopted here should render a more complete perspective of people's experiences with discrimination. These different dimensions of discrimination were assessed with measures tapping into overall experiences with discrimination, perceptions of day-to-day discrimination, and likelihood of

attributing specific events to discrimination. Unless otherwise indicated, all responses were made on 7-point scales ranging from 1 ("*strongly disagree*") to 7 ("*strongly agree*").

Acculturation strategies. The two acculturation dimensions defined by Berry (2001; i.e., participation in the host society and maintenance of own culture) were measured separately. These dimensions were assessed by measuring participants' preferences towards the specific domains of language, culture, and social interactions; given that these domains represent key areas in the life of acculturating individuals (Berry, 1990; 2001; Ryder et al., 2000; Sam, 2000). Willingness to participate in the host community was assessed with eight items (e.g., "I want to speak to British people and know more about them" and "I like British culture and I will do my best to be part of it"). After reverse scoring the appropriate items, these were averaged ($\alpha_{T1} = .66$, $\alpha_{T2} = .70$), with a higher score indicating greater commitment to participate in the host community. Maintenance of own cultural heritage was assessed with nine items (e.g., "I want to hang out with people from my country", and "It is important to me to preserve my own cultural heritage). A higher score on this measure indicated a greater willingness to maintain one's own cultural background ($\alpha_{T1} = .69$, $\alpha_{T2} = .64$). Both participation in the host society and own culture maintenance had good retest reliability as T1 measures were strongly correlated with the same variables at T2 ($r = .33$, $p < .001$ and $r = .64$, $p < .001$, respectively).

Experiences with discrimination. This measure was adapted from Branscombe et al. (1999) and assessed perceptions of group-based discrimination by averaging responses to six items (e.g., "I feel British people look down on me because I'm from a foreign country" and "British people have discriminated against me because I am not from the U.K."). A higher score on this scale indicated more perceived discrimination ($\alpha_{T1} = .80$, $\alpha_{T2} = .77$). This measure had a good retest reliability ($r = .49$, $p < .001$).

Day-to-day discrimination. Although not included in the original approach by Branscombe and colleagues (1999), we decided to include a measure that was more specific to the context of international students. This measure was included because students have different experiences with discrimination depending on whether they face it on or off campus (Hanassab, 2006). Given that our previous measure tapped into overall perceptions of discrimination, this measure accounted for students' experiences in common daily events on campus. In this scale developed for our study we asked "Looking at the following events please state how often you experienced them in the UK because you are from a foreign country" and then provided a list of thirteen events (e.g., "When working with classmates, other students have acted as if they are better than you" and "At the university other students have treated you with less respect"). A higher score indicated more perceived discrimination (α_{T1} = .91, α_{T2} = .89). This measure had a good retest reliability (r = .66, p < .001).

Attributions to prejudice. This measure was adapted from Branscombe et al. (1999) and assessed students' likelihood of attributing a negative event to discrimination. We asked "Next, please imagine the following events and indicate the chance (in percentage) that you would attribute each of them to prejudice or discrimination if the events happened to you". Participants then responded to six items (e.g., "Suppose you apply for a job in the UK that you believe you are qualified for. After the interview, you are told that you didn't get the job" and "Suppose you want to join an organisation in the UK whose members are mostly British. You are told that they are not taking new members at this time"). Responses were made on a 0 to 100% scale with 10% increments. A higher score indicated a higher chance of making an attribution to prejudice (α_{T1} = .84, α_{T2} = .83). The attribution to prejudice measure had good retest reliability (r = .61, p < .001).

To assess whether the three measures of discrimination above provided an appropriate measurement of perceived discrimination, we performed a factor analysis with oblimin

rotation with all items at T1 and T2 separately. This analysis revealed three factors at both time points accounting for 35%, 11%, and 8% (at T1) and 33%, 12%, and 9% (at T2) of the total variance. At both time points, each item had high loadings (> .70) on the expected factor and had lower loadings (< .40) on the remaining factors suggesting that each scale was measuring different aspects of discrimination. Factoring together all the items showed a good reliability ($\alpha_{T1} = .76$, $\alpha_{T2} = .76$).

Socio-structural variables. We adapted a measure from Mummendey, Kessler, Klink, and Mielke (1999) to assess permeability with three items (e.g., "For a foreign student it is nearly impossible to be included in British groups", reverse-coded), legitimacy with two items (e.g., "British people are entitled to have a better treatment than foreign students"), and stability with two items (e.g., "I think that the relationship between foreign students and British people will remain the same for the next years"). A higher score indicated more perceived permeability ($\alpha_{T1} = .74$, $\alpha_{T1} = .65$), legitimacy ($r_{T1} = .61$, $p < .001$, $r_{T2} = .71$, $p < .001$), and stability ($r_{T1} = .38$, $p < .001$, $r_{T2} = .48$, $p < .001$). In addition, we performed a factor analysis with an oblimin rotation revealing three factors explaining 36%, 21%, and 16% of the variance at T1 and 29%, 24%, and 20% of the variance at T2. All items loaded into its correct constructs with high loadings (> .70) on the expected factor and lower loadings (< .40) on the remaining factors. This provides confidence in the separateness of the three constructs at both time points.

Another important aspect regarding this measure was to rule out the possibility that a perceived lack of permeability might be a proxy measure for perceived discrimination. To rule out this possibility we assessed whether perceived discrimination and perceived permeability were conceptually different with a factor analysis with oblimin rotation. Results from this analysis for all the items yielded the respective three factors for our discrimination measures and a separate factor corresponding to the perceived permeability measure

explaining 5% of the variance at both T1 and T2. The three perceived permeability items had high loadings (> .70) on the expected factor and had lower loadings (< .40) on the remaining factors. The factor analysis thus confirmed the expected structure providing further confidence in the separateness of these constructs.

Demographic variables. Apart from age, gender, nationality, and for how long the study's participants were living in the UK we assessed their perceived level of English. This was measured by asking them to respond in a "1" (*very poor*) to "7" (*very good*) to the following statements: "You feel that your understanding of spoken English is"; "You feel that when writing in English your level is"; "You feel that when reading in English your understanding of the text is"; and "You feel that your level of spoken English is". Finally, we asked participants to specify their ethnicity by ticking a box from a common list of ethnicities (e.g., Central Asian, Middle Eastern, East Asian, White and Asian, Caribbean, African, White European).

Results

Preliminary analyses

We initiated data screening with an analysis assessing whether there were differences between students who participated in both phases of the study (i.e., T1, T2) and those who dropped out. Consistent with Tabachnick and Fidel (2002), we coded the outcome variable '1' (participated in both waves) and '0' (failed to complete the study). All demographic variables were entered together as predictors in one block; whilst the discrimination measures, permeability, stability, legitimacy, and acculturation strategies were introduced in another block. Results revealed only a main effect for age (β = -.23, wald = 5.47, *p* = .019), suggesting that older students were more likely to drop out after the first questionnaire. None of the other variables predicted participation at Time 2. This analysis was performed together with a set of one-way ANOVAs examining whether there were differences in the study's key

variables as a function of participants' gender, age, subject of study, university, and time spent in the UK. No differences were found and therefore these variables were not included in subsequent analyses. An exception was students' perceived level of English that was correlated with participation in the host society (r_{T1} = .32, p < .001) and was thus controlled for in all analyses below. Because older students were more likely to drop out from our study, we also controlled for age in all analyses.

Finally, because students' nationality and ethnicity were divided across multiple countries and ethnicities, we aggregated these data in a new variable distinguishing between White (n = 58) and non-White (n = 50) participants. We followed this strategy because non-White international students tend to perceive more discrimination than White students (Lee & Rice, 2007; Rankin & Reason, 2005). In line with previous research, in our sample, non-White students perceived more day-to-day discrimination at both time points (M_{T1}=2.77; SD=1.22 and M_{T2}=2.73; SD=1.02) than White students (M_{T1}=2.25; SD=1.04 and M_{T2}=2.30; SD=1.06), $F_{T1}(1,104)$=5.81, p=.018, ηp^2=.053 and $F_{T2}(1,106)$=4.53, p=.036, ηp^2=.041. Non-White students also tended to make more attributions to prejudice (M_{T1}=55.51; SD=23.00 and M_{T2}=47.52; SD=21.24) than their White counterparts (M_{T1}=39.00; SD=19.10 and M_{T2}=40.35; SD=19.58), $F_{T1}(1,104)$=16.41, p<.001, ηp^2=.136 and $F_{T2}(1,104)$=3.27, p=.074, ηp^2=.040. Interestingly, non-White students perceived less permeability (M_{T1}=4.69; SD=1.33) than White students (M_{T1}=5.18; SD=1.08) at T1 but not at T2, $F_{T1}(1,105)$=4.38, p=.039, ηp^2=.040. and $F_{T2}(1,106)$=1.30, p=.256, ηp^2=.012. Finally, at both time points non-White students perceived more legitimacy (M_{T1}=3.28; SD=1.60 and M_{T2}=3.04; SD=1.58) than White students (M_{T1}=2.02; SD=1.27 and M_{T2}=2.10; SD=1.54), $F_{T1}(1,106)$=20.86, p<.001, ηp^2=.164 and $F_{T2}(1,106)$=9.65, p=.002, ηp^2=.083. There were no other differences in our key variables (Fs < 1.67; ps > .199). Because of these differences we controlled for ethnicity (i.e., White and non-White) in all analyses below.

Descriptive analyses

Table 2 presents means and standard deviations for all measures. Scores for the discrimination measures suggest that the sample did report some discrimination. On average, participants were willing to participate in the host society but also keen to maintain their own cultural background. Students thought that group boundaries were somewhat permeable and stable; whilst the legitimacy of their group status was below the midpoint of the scale. Five ANOVAs with repeated measures were performed to analyse differences between each variable across the two time points. Results from this analysis indicated that there were no main effects for time on any variable.

Table 2 also shows the correlations for all measures. Importantly, the different measures tapping into perceived discrimination were strongly correlated with each other at Time 1 and 2 (e.g., experiences with discrimination were correlated with day-to-day discrimination). Participation in the host society was negatively correlated with most discrimination measures at both time points (e.g., correlation with experiences with discrimination). Likewise, perceived permeability was negatively correlated with most discrimination measures. In contrast, legitimacy and stability were positively correlated with the discrimination measures (e.g., legitimacy correlated with attributions to prejudice and stability correlated with experiences of discrimination. Finally, participation in the host society was correlated with permeability.

Testing our hypothesised model

We predicted that facing discrimination would be associated with lower perceptions of permeability of group boundaries, which in turn would result in both lower endorsement of participation in the host society and an increased willingness to maintain own cultural background. We were though open to different possibilities for the relationships involving stability and legitimacy. To test our predictions we used the structural equation modelling

software Mplus 5.21 (Muthén & Muthén, 1998–2007). In this analysis we compared our hypothesised model against alternative models. In the first model (A), we tested the null hypothesis that there were no relationships between the study's variables. The second model (B) was our hypothesised model. The third model (C) was identical to model B but with the paths from (and to) the sociostructural variables constrained to zero. This should allow assessing whether these variables accounted for a significant amount of variance when examining the effects of discrimination on acculturation strategies. Model (D) was also similar to our hypothesised model (B) but permeability, stability, and legitimacy were allowed to interact (as suggested by Verkuyten & Reijerse, 2008).

All models contained two latent variables named perceived discrimination at T1 and T2. Each latent variable comprised the following indicators: experiences of discrimination, day-to-day discrimination, and attributions to prejudice. We allowed the error variances of each factor at Time 1 to correlate with the error of the respective factor at Time 2. For model identification reasons we constrained the factor loading of experiences of discrimination to 1 and freely estimated the loadings of the other measures. With this approach we had a latent factor tapping into feelings of stable and pervasive discrimination (this approach is consistent with previous work; e.g., Branscombe et al., 1999; Schmitt et al., 2002). In all models we included both acculturation dimensions at T1 and examined whether they had an impact on perceived discrimination at T2 to allow testing for both causal relationships between perceived discrimination and acculturation strategies[3].

In Table 3 we reported the fit indices for model comparison. The more restrictive model (A), the model (C) testing the null hypothesis that there were no relationships between permeability, stability, and legitimacy, and the final model (D) testing an interaction between the sociostructural variables did not meet absolute thresholds for good fit. In contrast, the hypothesised model (B) showed an excellent fit indicated by a non-significant chi-square, x^2

(97) = 113.20, *p* = .125. This was also supported by a high value of .97 for CFI and .95 for

TLI. RMSEA provided further support for the model indicating an estimate of .04. An

inspection of the model parameters showed that all indicators loaded on their respective latent

factors, *p*s < .001 (see Figure 1). We then started by examining the path coefficients between

each variable at T1 with its corresponding variable at T2. An inspection of these coefficients

showed that perceptions of discrimination (T1) had an impact on perceptions of

discrimination (T2), β=.78, *p*<.001. Permeability, stability and also legitimacy at T1 had an

impact on their respective variables at T2, β=.40, *p*=.028, β=.64, *p*=.016, and β=.73, *p*<.001.

However, participation in the host society (T1) did not impact on the same variable at Time 2,

β=.07, *p*=.777; and own culture maintenance (T1) also did not impact on its corresponding

variable at Time 2 (T2), β=-.18, *p*=.083.

Results for perceived discrimination (T1) suggested that it did not have a direct

impact on participation in the host society (T2) or own culture maintenance (T2), β=.19,

p=.334 and β=-.23, *p*=.140, respectively. For the reverse causal paths, our analysis showed

that participation in the larger society (T1) and own culture maintenance (T1) also did not

impact on perceived discrimination (T2), β=.10, *p*=.316 and β=-.01, *p*=.908, respectively. For

the socio-structural variables, the analysis shows a significant path between perceived

discrimination (T1) and permeability (T1), β=-.68, *p*<.001, legitimacy (T1), β=.31, *p*=.002,

and stability (T1), β=.30, *p*=.003. The longitudinal paths, however, showed an effect of

permeability (T1) on participation in the host society (T2) and own culture maintenance (T2),

β=.55, *p*<.001 and β=-.42, *p*<.001. There were no longitudinal effects of legitimacy (T1) on

participation in the host society (T2) and own culture maintenance (T2), β=.03, *p*=.726 and

β=.07, *p*=.370; and also for stability (T1) on both acculturation dimensions at Time 2, β=.01,

p=.928 and β=.06, *p*=.448, respectively. There were also no effects of permeability,

legitimacy, and stability (T1) on perceived discrimination (T2), β=-.13, *p*=.334, β=.01,

p=.946, and β=-.01, p=.868 respectively. Conversely, there were no effects of perceived discrimination (T1) on permeability, legitimacy, and stability (T2), β=-.17, p=.551, β=-.23, p=.067, and β=.13, p=.368. Finally, perceived level of English (T1) was significantly associated with less perceived discrimination (T1) and less legitimacy (T1) β=-.41, p<.001 and β=-.22, p=.016. Perceived level of English was positively associated with participation in the host society and negatively associated with legitimacy, β=.33, p<.001 and β=-.28, p<.001. Ethnicity was significantly associated with perceived discrimination (T1) and legitimacy (T1), β=.25, p=.016 and β=.34, p<.001. There were no effects of age in any of the study's variables.

To test our main prediction (i.e., whether there was an indirect longitudinal effect of perceived discrimination on both acculturation dimensions via perceived permeability), we performed a bootstrapping procedure (see Shrout & Bolger, 2002). Specifically, an analysis with 5,000 bootstrap samples showed that perceived discrimination is associated with permeability in students' first year which in turn results in a lower willingness to participate in the host society; indirect effect, β= -.36 (95% CI [-0.679, -0.121]). The opposite indirect effect was found for the second dimension of acculturation. Thus, perceived discrimination had an impact on permeability during students' first year abroad, increasing their willingness to maintain their own culture; indirect effect, β=.27 (95% CI [0.098, 0.472]).

Finally, although the acculturation dimensions at Time 1 were highly correlated with the same measures at Time 2 (assuring a high reliability of these measures), we found no longitudinal effects between them in our hypothesised model. This lack of longitudinal effects might have been due to the strong predictive power of perceived permeability which explained most of the variance in the model. Evidence of this sort can be demonstrated in more detail in our data with a stepwise linear regression method. For example, introducing participation in the host society (T1) together with age, level of English, and ethnicity (the

last three were the covariates in our study) as independent variables and participation in the host society (T2) as the dependent variable revealed the significant and expected effect between the T1 and T2 measures ($p = .007$). However, in a second regression with the same variables together with the remaining variables in our model (i.e., discrimination and the sociostructural variables) showed a non-significant effect between participation in the host society from T1 to T2 ($p = .082$). Consistent with this, the R^2 change from the first ($R^2 = .09$) to the second regression ($R^2 = .21$) is significant ($p = .008$), suggesting that much of the variance between the T1 and T2 acculturation measures was explained by discrimination and the sociostructural variables. This finding adds to our argument that it is crucial to examine the perceived permeability of group boundaries within the context of discrimination and acculturation strategies.

Discussion

The present study sought to explore the mechanisms that underpin the impact of international students' experiences with discrimination on their acculturation strategies. In line with predictions derived from social identity theory, findings indicated that international students' perception of being a target of discrimination is associated with a sense that boundaries between their and host groups are impermeable. In the face of such barriers, they were more likely to embrace their own cultural heritage and to avoid the host society. The other sociostructural variables (i.e., legitimacy and stability) were not significant for the overall process as they were not related to acculturation strategies.

Whilst perceived discrimination is usually defined as the perception that one's negative treatment is due to a given group membership (e.g., Branscombe et al., 1999), perceived permeability of group boundaries is the perception that it is possible to move between groups (Tajfel, 1979; in this context between the group of international students and the host group). Although these two concepts are likely to be correlated, they bear significant

differences that are important to emphasise. Consistent with this argument, despite a strong correlation between both variables, our factor analysis revealed that participants recognised them as conceptually different. Moreover, our SEM analysis showed that perceived discrimination did not predict acculturation strategies over time when controlling for perceived permeability. This finding suggests that being discriminated against does not directly shape one's strategies on how to go about acculturation. Instead, we observed an indirect impact of discrimination on acculturation strategies through perceived permeability of group boundaries. It indicates that it is the particular nature of perceived permeability in indicating what international students can (or cannot) do in their intergroup context that defines their acculturation strategies. This conceptual difference is critical for understanding the role of both variables in our model. It is important to note that there were no longitudinal effects between perceived discrimination and perceived permeability, so we cannot argue in favour of other more specific relationships (e.g., a mediation) involving these variables. Instead, our data indicates that both variables work in tandem and accounting for one's perceptions of the prevailing intergroup context together with perceived discrimination is crucial when aiming to better understand the formation of acculturation strategies.

The longitudinal analysis supported the causal predictions in our model whereby perceived discrimination leads to changes in acculturation strategies rather than the reverse. This is in line with dominant models of acculturation (e.g., Berry et al., 2006) suggesting that individuals who perceive more discrimination endorse the dominant culture at a lower rate. This is also consistent with work by Portes and Rumbaut (2001) showing that adolescent immigrants in the US who confront discrimination are more likely to drop the word "American" from their ethnic label (e.g., coming to describe themselves as "Chinese" rather than "Chinese-American").

This evidence fleshes out SIT's contention that perceiving one's group to be a victim of discrimination is associated with the perception that group boundaries are impermeable (Tafjel, 1978), which in turn increases ingroup commitment (Branscombe et al., 1999; Ellemers, 1993; Ellemers et al., 1988; Ellemers et al., 1990). From an acculturation perspective, the present findings are consistent with work by Badea and colleagues (2011) showing that perceived discrimination is associated with a preference for maintaining one's own culture as well as reluctance to participate in the host society. It accords too with Piontkowski and colleagues's (2000) observation that when boundaries between groups are impermeable, individuals are forced to stay separate from the host society, as well as with research showing that perceived discrimination is associated with hostility towards the majority (Branscombe et al., 1999).

Importantly, perceived discrimination was associated with higher perceived stability and legitimacy of group status. One possible explanation is that perceiving discrimination led international students to hold a devalued view of their group and thus to consider that they deserve a low status. Relatedly, system justification theory (Jost et al., 2004) argues that members of disadvantaged and low-status groups are often encouraged to legitimise and justify systems based on inequalities. At the same time, though, there were no longitudinal effects linking stability and legitimacy of group status to acculturation strategies — suggesting that these factors were not significant determinants of participants' orientation to the host society. Furthermore, we did also not find support to the idea that stability and legitimacy could interact to impact on acculturation strategies. Verkuyten and Reijerse (2008) found an interaction with the sociostructural variables on identification with both minority and majority groups. In the present research we drew on previous work focusing on the relationship between discrimination and an important group commitment variable (i.e., identification) to understand how discrimination would impact on another group commitment

variable (i.e., acculturation strategies). Although in our study the relationship between discrimination and acculturation strategies was identical to that found in work on identification, it appears in our results that stability and legitimacy relate differently to acculturation strategies when compared to identification (when reporting the limitations of the present study we return to this point).

Limitations and future research

One important limitation in this study is that it included a two-wave survey and, as a result, we were not able to test some other potentially interesting causal predictions (e.g., concerning the relationship between perceived discrimination and permeability). Our data provided some mixed support to the potential causal relationships as there were no longitudinal effects between both variables, but it was found that they are highly correlated at T1. Previous research (e.g., Tajfel, 1978) predicts that perceived discrimination should lead to perceptions of the intergroup context and sociostructural variables (and not the opposite), but the nature of our data does not allow to reach any conclusions leaving this issue as an interesting question for future research.

International students share a number of characteristics with other minority groups. In fact, our main findings concerning the perceived permeability of group boundaries were much in line with previous work with typical minority populations (e.g., Branscombe et al., 1999 and Piontkowski et al., 2000) and artificial groups in the laboratory (e.g., Ellemers et al., 1988; 1990). This shows that our findings with permeability can provide an interesting insight to how minority groups in general develop their acculturation strategies in contexts of discrimination. However, in contrast to immigrants for example, international students only stay abroad for a short and planned period of time. Most of these students live abroad temporarily and thus might not be willing to endorse strategies aiming at challenging intergroup relations (i.e., they might be perhaps more inclined than other groups to accept

discrimination as legitimate and stable). For this reason, perceptions of stability and legitimacy can be of a weaker importance to our sample than to immigrants who stay more permanently. It is perhaps because of this aspect that we did not find any effects with stability and legitimacy on acculturation strategies. Indeed, testing the model presented here with different groups and in other contexts is an interesting plan for future research.

Conclusion and implications

The present research sought to examine the experiences of international students with perceived discrimination and its impact on acculturation strategies. Our study showed that perceiving discrimination is associated with international students' perception that they cannot leave their minority group and be part of the host group. This perception in turn increases individuals' willingness to avoid the host group whilst increasing a desire to maintain their own culture.

Our study provides a number of important practical and theoretical implications. First, for international students perceived discrimination was not associated with more instability or illegitimacy. This is an important aspect of our findings because perceiving one's relative status as illegitimate and unstable is fundamental for rallying ingroup members together in attempts at challenging the status quo (Reicher & Haslam, 2006; Tafjel, 1978). It is also the case that when low status groups perceive their status to be legitimate, they are more likely to accept the status quo and not engage in collective action (Turner & Brown, 1989; Livingstone, Spears, Manstead, & Bruder, 2009). Given that in our study participants tended to justify the system by increasing perceptions of legitimacy and stability when they perceived discrimination, students would be less likely to engage in collective action and challenge either group status or the discrimination that is targeting them. Indeed, it is rare to observe minorities acting collectively in order to challenge discrimination (Foster &

Matheson, 1998; Wright, Taylor, & Moghaddam, 1990) and our study provides evidence of a possible reason for this fact.

These processes also have strong implications for other acculturating groups (e.g., immigrants) and their societies. Specifically, our results showed that perceiving discrimination leads to a greater endorsement of one's cultural background. This is an important point given that research has argued that among minority groups increasing ingroup commitment is crucial for mitigating the negative effects of discrimination (Branscombe et al., 1999). Another important consequence is that under these circumstances increased commitment to the minority group may lead to social support which is known to be vital for coping with stressful situations (Haslam, O'Brien, Jetten, Vormedal, & Penna, 2005).

On the other hand, our data also showed that perceiving discrimination leads people to avoid the host society and to decrease their endorsement of the host culture. However, contact with the host society is crucial for the adaptation to a new country and transmitting general competencies that are needed when joining a new society and adapting to the mainstream. Thus, although individuals increase their commitment to their minority group and receive psychological shelter from this group membership, they may see the consequences of discrimination amplified as they compromise their development of competencies and opportunities in the mainstream.

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Footnotes

1. Sweden (n=5), Norway (n=2), Poland (n=13), Russia (n=1), Germany (n=18), Portugal (n=5), Mexico (n=1), Belgium (n=2), France (n=2), Kazakhstan (n=2), China (n=18), Malaysia (n=10), Italy (n=2), Holland (n=1), Greece (n=2), Slovakia (n=2), Latvia (n=1), India (n=2), Finland (n=3), Singapore (n=3), Japan (n=4), Saudi Arabia (n=1), Brazil (n=1), Croatia (n=1), Vietnam (n=1), Taiwan (n=2), Hungary (n=1), Cyprus (n=2), Nigeria (n=3), Congo (n=1), Mauritius (n=1), Lithuania (n=1).

2. Universities of Glasgow, Strathclyde, Dundee, Napier, Heriot-Watt, Edinburgh, and St. Andrews.

3. For the testing our model we reported the fit indices provided by Mplus for model comparison, i.e. the chi-square goodness of fit test, the comparative fit index (CFI), the Tucker-Lewis-Index (TLI), and the root-mean-square error of approximation (RMSEA) values. Hu and Bentler (1999) suggested that a good fit should have a non-significant chi-square, values of .95 or higher for CFI and TLI, and .06 or lower for RMSEA.

Table 1. Detailed description of the study's sample

Demographic variables	(*n*; %)
Ethnicity:	
Central Asian	(3; 3%)
Middle Eastern	(1; 1%)
East Asian	(32; 30%)
White and Asian	(1; 1%)
Any other Asian background	(4; 4%)
African	(4; 4%)
Any other black background	(2; 2%)
Any other mixed background	(1; 1%)
European	(58; 54%)
Nationalities by continent:	
Europe	(61; 56%)
South America	(3; 3%)
Asia	(41; 38%)
Africa	(4; 4%)
Religion:	
Protestant	(4; 4%)
Christian	(10; 9%)
Catholic	(21; 19%)
Orthodox	(3; 3%)
Baptist	(1; 1%)
Muslim	(3; 3%)
Buddhist	(5; 5%)
Hinduism	(3; 3%)
Lutheran	(2; 2%)
None	(53; 49%)
Religion practice:	
Yes	(18; 17%)
No	(89; 82%)

Table 2. Means and standard deviations for all measures at both time points.

| Measures	Mean (SD) T1	Mean (SD) T2	1	2	3	4	5	6	7	8	9
1 – Experiences with discrim.	3.82(1.22)	3.93(1.12)	-	.54**	.34**	-.23*	.14	-.47**	.13	.31*	-.06
2 – Day-to-day discrimin.	2.49(1.15)	2.50(1.05)	.60**	-	.41**	-.30**	.07	-.55**	.23*	.21*	-.30**
3 – Attributions to prejudice	46.60(22.48)	43.32(20.46)	.28**	.40**	-	-.21*	.19	-.28**	.13	.22*	-.17
4 – Particip. host society	5.56(0.73)	5.51(0.85)	-.33**	-.46**	-.06	-	-.19*	.43**	-.04	-.14	.24*
5 – Own culture maintenance	4.42(0.86)	4.44(0.78)	.15	.07	-.07	-.28**	-	-.14	.02	.20*	-.17
6 – Permeability	4.95(1.22)	4.88(1.16)	-.43**	-.63**	-.42**	.34**	-.07	-	-.10	-.18	.18
7 – Legitimacy	2.60(1.56)	2.54(1.62)	.26**	.29**	.38**	-.03	.01	-.14	-	.03	-.24*
8 – Stability	4.60(1.30)	4.57(1.28)	.19	.27**	.29**	-.14	.19	-.21**	.23*	-	.03
9 – Perceived English level	5.77(1.05)	5.94(0.98)	-.09	-.42**	-.20*	.30**	-.11	.34**	-.31**	-.14	-

Note: Time 1 correlations are below the diagonal of the matrix; Time 2 correlations are above the diagonal.   * $p < .05$; ** $p < .005$

Table 3. Model fit indexes for our predicted model (model B) and the other alternative models.

Model	df	Goodness of fit	CFI/TLI	RMSEA
A	155	526.362	.35/.29	.16
B	**97**	**113.20**	**.97/.95**	**.04**
C	127	362.74	.59/.45	.14
D	161	1225.99	.35/.04	.26

Figure Captions

Figure 1. Model (B) testing the indirect effect of perceived discrimination on acculturation

strategies via the sociostructural variables. Note that in the model we did not include age,

perceived level of English, ethnicity, and non-significant paths for clarity reasons. * p <

.010; ** p < .001
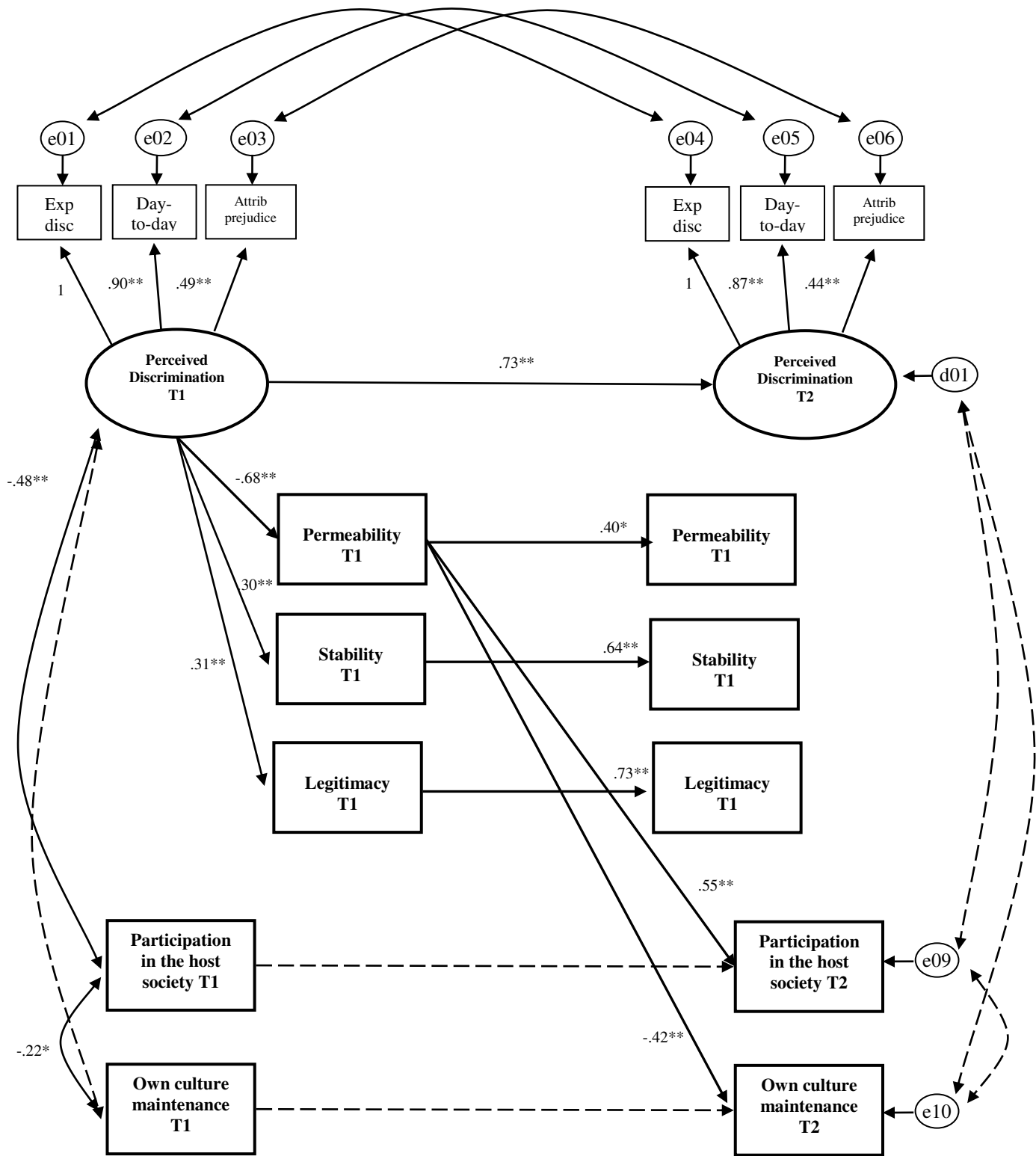
Appendix

Experiences with discrimination
I feel British people look down on me because I'm from a foreign country
British people have discriminated against me because I am not from the U.K
I have personally been a victim of discrimination in the UK because I'm from a foreign
    country
On average, people in the UK society treat British and foreigners equally*
It is easy to understand why foreign groups in the UK are still concerned about societal
    limitations of their opportunities
In the UK there aren't any prejudices against foreign people*

Day-to-day discrimination
When working with classmates, other students have acted as if they are better than you
During tutorials other students have acted if you are not intelligent
While having a discussion during tutorials other students didn't take you seriously
People weren't interested in your opinion about an academic topic
During tutorials you felt that you have less opportunities to talk
In town you have received worse service (e.g. in a restaurant or shop)
In town people have called you names or insulted you
In a public place people have treated you with less courtesy
At the University other students have treated you with less respect
Within a group of students you felt excluded from some conversations
You felt that others didn't invite you to go out
You felt it was difficult to get close to another group of students
You felt that other students weren't interested in including you in their group of friends

Attributions to prejudice
Suppose you apply for a job in the UK that you believe you are qualified for. After the
    interview, you are told that you didn't get the job
Suppose you want to join an organisation in the UK whose members are mostly British. You
    are told that they are not taking new members at this time
After class at your university, you approach the lecturer to ask a question about the lecture,
    but the lecturer abruptly ends your conversation and begins talking to another student
At your university, you are assigned to a group of six students in order to complete a project.
    You are the only foreign member in the group. The other members of the group are not
    very friendly and don't pay much attention to what you have to contribute
You are having a conversation with a group of individuals, all British. They laugh at
    everything you say, even though you are not trying to be funny
You repeatedly ask a teaching assistant to help you prepare for the upcoming test. This
    teaching assistant seems to be more helpful to British students

Permeability
It is very easy for a foreign student to be accepted into British society*
For a foreign student it is nearly impossible to be included in British groups

If you wanted to, it would be easy for you to become involved in social activities with British students*

Stability
Discrimination between British people and foreign students will not change easily.
I think that the relationship between foreign students and British people will remain the same for the next years

Legitimacy
British people are entitled to have a better treatment than foreign students
It is justified that British people have a superior status when compared to foreign students

Participation in the host society
I feel at ease with British people
I like British culture and I will do my best to be part of it
I feel uncomfortable being with people from the UK*
I would like to live in an area where there are British people
I make an effort to improve my English
I don't feel comfortable to speak English with friends*
I want to speak with British people and know more about them
I don't want to learn more things about the British culture*

Own culture maintenance
I want to 'hang out' with people from my country
I would like to have more friends from my own nationality
I have no wish to go back to my own country*
It is important to me to preserve my own cultural heritage
I would like to live in an area where there are only people from my nationality
The culture from my own country is something that I value
If I could I would only use my own national language in my daily life
I enjoy going to gatherings or parties held by people of my own nationality
The culture of my own country is not interesting*

Note: * reverse-coded item.