



Who benefits from the international classroom? A longitudinal examination of multicultural personality development during one year of international higher education

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Abstract

Enhancing students' intercultural competences through international higher education requires a thorough understanding of the way in which these competences develop over time, how they relate to outcomes, and which factors predict their growth. To answer these questions, a three-wave longitudinal study was conducted among a sample of first-year students in an international university program ($n=425$). Intercultural competences were operationalized through the five dimensions of the Multicultural Personality Questionnaire (MPQ): Cultural Empathy, Openmindedness, Flexibility, Social Initiative and Emotional Stability. We examined development of these traits across one year, as well as their relationship with stress, life satisfaction, and academic performance (GPA). Cultural background (local vs. international student) and prior international experience (yes/no) were included as predictors. Results show that MPQ scores at the beginning of the year negatively relate to change across semester 1, which in turn is negatively related to change across semester 2. These findings suggest the presence of ceiling effects in MPQ development. In semester 1, emotional stability acts as a buffer against stress. In semester 2, stress is lower among students with higher scores on cultural empathy, and lower scores on flexibility. Cultural empathy and social initiative relate positively to academic performance. No significant main effects were found for cultural background, or prior international experience. However, these predictors interact on openmindedness and social initiative: local students with no prior international experience show a significant increase in these dimensions across the first semester, whereas the others do not.

Keywords Internationalization · Higher Education · International Students · Intercultural Competences · Multicultural Personality · Longitudinal Design · Student Outcomes

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Introduction

Institutes of higher education are placing increasing emphasis on enhancing students' intercultural competences (de Wit & Altbach, 2021). To accomplish this, many international university programs strive to enhance intercultural learning through a combination of student mobility and internationalization at home (Robson et al., 2018), creating what is colloquially called 'the international classroom'. An increased emphasis on public accountability in the higher education sector has led institutes to seek for measurable effects of internationalization on students' intercultural learning (Lantz-Deaton, 2017). As a result, a significant body of empirical work has emerged that examines intercultural competences among university students (see Deardorff & Arasaratnam-Smith, 2017) or the effectiveness of one-time intercultural training and exchange programs (see Fantini, 2018; Sit et al., 2017). One of the remaining challenges is to examine longitudinal development of intercultural competences across more than two time points, and to identify factors that may affect growth trajectories. Furthermore, the majority of previous research mainly focuses on the experiences of international students (e.g. d'Hombres & Schnepf, 2021; Netz, 2021), while the phenomenon of internationalization at home, and the impact of internationalization on local students, remain understudied.

The present research contributes to existing literature by examining the longitudinal development of students' intercultural competences across the first year of an international university program, including measures at the start of the year (T1), after the first semester (T2) and after the second semester (T3). Intercultural competences are operationalized through the Multicultural Personality Questionnaire (MPQ; Van der Zee & Van Oudenhoven, 2000, 2013), which includes five subscales that have been shown to predict intercultural effectiveness in an educational context (Van Oudenhoven & Van der Zee, 2002). We also examine how multicultural personality development relates to students' stress, life satisfaction and academic performance. Finally, we examine which students are more likely to benefit from the international classroom, by comparing the development of local vs. international students in the same program, while taking into account their prior international experience.

Theoretical background

Multicultural personality

Scholars have established that individuals react differently to cultural diversity in their social environment, leading to different degrees of intercultural effectiveness (Leung et al., 2014). A significant predictor of these reactions is personality, often operationalized in terms of the Big Five personality traits (McCrae & John, 1992). However, through a meta-analysis, Wilson et al. (2013) show that domain-specific personality traits, such as cultural empathy, explain more variance in intercultural effectiveness than more general personality traits. Over the years, several personality frameworks have been developed that are specific to the cross-cultural domain, leading to sets of traits that are referred to as *multicultural personality*.

The most commonly used framework for assessing multicultural personality is the Multicultural Personality Questionnaire (MPQ; Van der Zee & Van Oudenhoven, 2000, 2001). Anchored in organizational and cross-cultural psychology, it was initially developed to

measure intercultural effectiveness of sojourners, such as international students and expatriates. Since its inception, its use has been extended to many other contexts, such as intercultural training (Hofhuis et al., 2020b), and personnel selection (Van der Zee et al., 2003). Earlier studies link MPQ scores to a myriad of intercultural outcomes, such as cross-cultural adjustment (Leong, 2007), diversity attitudes (Hofhuis et al., 2015), and conflict management styles (Vallone et al., 2022). Through this growing body of work, the MPQ has been revealed as one of the most robust instruments for assessing intercultural competence (See Chen & Gabrenya, 2021 for a comparison with other measures).

The instrument consists of five subscales: Cultural Empathy (CE) refers to empathizing with the feelings, thoughts, and behaviors of individuals from a different culture; Emotional Stability (ES) reflects the individual's ability to stay calm under novel and stressful conditions; Flexibility (FX) is the ability to switch easily from one behavioral strategy to another; Openmindedness (OP) refers to an open and unprejudiced attitude toward cultural differences; Social Initiative (SI) refers to a tendency to actively approach social situations, initiating communication rather than waiting and watching.

A sizeable proportion of the studies that employ the MPQ have examined how its dimensions relate to behavior, attitudes, and outcomes of (international) university students around the globe. For example, among university students in the Netherlands, cultural empathy, openmindedness and flexibility predicted motivation to study abroad (Van der Zee & Van Oudenhoven, 2000). Among Chinese and Malaysian students in New Zealand, cultural empathy and emotional stability predicted socio-cultural adjustment (Ward et al., 2009). A study among a sample of Singaporean undergraduates showed that all five dimensions positively relate to socio-cultural adjustment, and all except flexibility appeared to enhance psychological adjustment (Leong, 2007) during an exchange.

Longitudinal development of multicultural personality

Longitudinal research on multicultural personality development is scarce. However, some prior studies have shown that multicultural personality traits can be dynamic, and may be affected by intercultural experiences. For example, Leong (2007) reports higher scores on four of the five MPQ dimensions after a cultural immersion program. Studies among multinational samples of students in British universities also confirm that MPQ scores are not necessarily stable (Schartner, 2016), and that intercultural group-work can lead to changes in flexibility and openmindedness (Liang & Schartner, 2020).

Further evidence for potential changes in personality resulting from intercultural experiences is provided by studies that use the more general Big Five personality framework (McCrae & John, 1992). Students who studied abroad display higher scores on openness, extraversion, and agreeableness as well as lower scores on neuroticism directly after the sojourn (Niehoff et al., 2017). Richter et al. (2021) also report that effects on openness and neuroticism may be sustained for a longer period, confirming the notion that students experience significant growth and psychological maturation as they go through these intercultural experiences.

In studying personality development during young adulthood, scholars often report on the *maturity-stability principle* (Donnellan et al., 2007), which states that individuals with higher levels of certain traits should experience smaller changes over the course of the developmental period, as their adaptation stabilizes over time. For example, a previous study on the development of personality traits in the context of high school students' international mobility experiences confirmed that students with lower pre-departure

levels showed stronger increases during the stay abroad (Hutteman et al., 2015). To date, it remains unclear whether maturity-stability effects may also occur in the development of multicultural personality. Previous studies that look at changes in MPQ scores used pre-post-test designs which do not allow for examining trajectories. As such, the first contribution of the present study is using a three-wave longitudinal design, enabling us to examine development in greater detail.

Research Question 1: How do scores on the five dimensions of the Multicultural Personality Questionnaire (MPQ) develop between the start (T1), end of the first semester (T2) and the end of the second semester (T3) of an international university program.

Effects of multicultural personality development on student outcomes

After describing how the five MPQ dimensions develop across the year, the next step is to analyze how they relate to students' life and study outcomes. It has been well established that studying in a new (inter)cultural environment can be a significant life event, which may have an influence on stress and psychological well-being (Geeraert & Demoulin, 2013; Hofhuis et al., 2019). Less is known about the experience of local students who participate in internationalization-at-home programs. There is some evidence that internationalization provides exciting opportunities and inspiring interactions, thus enhancing life satisfaction, while other studies show that cultural diversity in one's social environment is associated with intercultural stressors, and may reduce life satisfaction (Van der Zee & Van Oudenhoven, 2013).

Some prior work is available that investigates the influence of multicultural personality traits on these outcomes. For example, emotional stability is consistently shown to be essential for coping with the stress of intercultural interactions, allowing high-scoring individuals to better regulate their (negative) emotions, which in turn may enhance effectiveness in intercultural interactions (Hofhuis et al., 2020b; Ward et al., 2004). The dimensions openmindedness and emotional stability have been shown to predict overall life satisfaction among expatriates and their children in a variety of different contexts (Van der Zee et al., 2007). Among international students, all five dimensions have been related to mental health and subjective well-being (Van Oudenhoven & Van der Zee, 2002).

Taking into account these previous cross-sectional studies, it appears that the relationships of MPQ dimensions with stress and life satisfaction are quite robust in different contexts. However, no previous research has investigated how these variables relate to each other across time. In the present study, we aim to answer this question, by studying how the five MPQ dimensions develop alongside stress and life satisfaction across the year.

Finally, there appears to be a hiatus in the literature regarding the influence of intercultural competences on academic performance. Previous work (e.g. Mittelmeier et al., 2019; Rienties et al., 2012) highlights the importance of socio-cultural adjustment for academic performance of students in international study programs. However, the role of multicultural personality in these processes remains understudied. To provide new insights in the issues raised above, the present study will answer the following research question:

Research Question 2: How does the development of the five dimensions of the Multicultural Personality Questionnaire (MPQ) relate to Stress, Life Satisfaction and Academic Performance of students in an international university program.

Influence of cultural background and prior international experience

As mentioned above, the literature on international higher education is generally divided into studies that focus on international mobility, and those that investigate internationalization at home (de Wit & Altbach, 2021). Most of the work cited above falls in the prior category. Scholars have theorized on the ways in which internationalization at home may affect student outcomes (see Almeida et al., 2019; Robson et al., 2018 for an overview), but empirical research on the effects of internationalization at home and cultural diversity in on-campus experiences is less common. Some recent examples of such work (e.g. Liang & Schartner, 2020; Peifer et al., 2021) suggest that on-campus intercultural learning may in fact be more effective than learning through mobility-based programs. However, we are still lacking a thorough empirical understanding of the development of intercultural competence, and specifically multicultural personality, through internationalization at home, and how it compares to the effects of mobility.

Furthermore, what is often overlooked in previous studies is that in many international university programs, both are happening side by side; international students live and study together with local students, taking the same courses and sharing the same social environment (Gaitán-Aguilar et al., 2022). On the one hand, such cultural mixing may provide opportunities for cultural learning, which could enhance intercultural competences. On the other hand, previous research suggests that both local and international students prefer to work together with others who share their cultural background (Volet & Ang, 2012), which may inhibit intercultural competence development. Therefore, it remains unclear what the effects of studying in an international classroom are for both groups, and whether they may show divergent patterns of development.

Finally, the question whether a student has moved abroad for their current education may not tell the full story. International education programs are said to disproportionately attract students who have previously experienced an episode of international mobility, i.e. during childhood or adolescence, by taking a gap year after secondary education, or through previous enrollment in tertiary education abroad (OECD, 2018). The psychological effects of spending a year abroad during adolescence or young adulthood are well established. Earlier studies show that teenagers who have migrated display higher openmindedness and cultural empathy, as well as lower emotional stability than those who have not had such an experience (Dewaele & Van Oudenhoven, 2009). Zimmermann et al. (2021) report that having previously engaged in international mobility was related to higher levels of multicultural self-efficacy and metacognitive intercultural competence, as well as lower levels of intergroup anxiety at the start of a study program. Interestingly, Iskhakova et al. (2022) show that the increase in cultural intelligence in a cultural immersion program is higher among those with prior international experience, which suggests that mobility may not only affect the overall level of intercultural competence, but may also influence an individual's ability to engage in cultural learning in the future. Together, these findings raise the question whether a student's early-life intercultural experiences may have an impact on their ability to benefit from international education.

To shed new light on the issues raised above, the present study aims to directly compare local and international students, as well as those with or without prior international experience in the same educational context, and investigate whether differences can be identified in the development of multicultural personality.

Research Question 3: How does the development of the five dimensions of the Multicultural Personality Questionnaire (MPQ) differ between local and international students, and those with or without prior international experience.

Methods

Sample and procedure

The sample for this study consisted of students of an international, English-language bachelor program in social sciences and humanities, at a research university in the Netherlands. To apply for the program, non-native speakers of English were required to demonstrate proof of proficiency in English. Therefore, we assume all participants were able to complete questionnaires in English. The study was approved by the Ethics Review Board of the first author's institution. Informed consent was obtained from all participants. No compensation was given.

Respondents were recruited among two consecutive cohorts (2017 and 2018) of first-year students. All new students who enrolled in the program were invited to participate through their institutional e-mail account, one month after the start of the program (T1—October), at the end of the first semester (T2 – February), and at the end of the academic year (T3 – June). For each wave, three reminders were sent, at one-week intervals. Four weeks after the initial invitation, the questionnaires were closed.

In total, 480 respondents were invited to participate in each wave. The final sample used in this study consisted of 425 respondents (62.8% female, 15.1% male, 22.1% other or unknown; $M_{\text{age}} = 19.1$, $SD = 1.58$, Range 18–35), who completed at least one of the three questionnaires. At T1, one of the researchers raised awareness of the project during a lecture, which resulted in 409 (85.2%) respondents participating. Such promotion was not conducted at later time points, which resulted in lower response rates at T2 ($n = 163$; 34.0%) and T3 ($n = 121$; 25.2%). In total, 65 respondents (15.3%) participated in all three waves, which provided us with sufficient information to successfully account for missing data among the other respondents (see missing data analysis below). Both cohorts were equally represented in the final sample (2017: $n = 203$; 47.8%, 2018: $n = 222$; 52.2%). No significant differences were found between cohorts on any of the study variables.

In total, 71 nationalities were represented in this sample. The majority of respondents possessed a European nationality, among which the Netherlands (46.6%), Germany (5.6%), France (2.4%), Italy (1.9%), and Turkey (1.7%) were the most represented. Among non-European respondents, the most represented nationalities were Vietnam (4.0%), India (1.9%), China (1.7%), USA (1.4%), and Indonesia (1.2%).

Measures

Multicultural Personality was assessed using the 40-item short form of the Multicultural Personality Questionnaire (MPQ-SF; Van der Zee et al., 2013), which has been validated for use in this context (Hofhuis et al., 2020a).¹ Respondents self-reported

¹ The study which validated the MPQ-SF for use in this context (Hofhuis et al., 2020a) made use of a subset of the dataset used in the present study. Specifically, MPQ-SF scores at T1 were used in both studies.

whether the five personality traits were applicable to themselves, on a 7-point Likert Scale (1 = not at all applicable; 7 = completely applicable). *Cultural Empathy* (CE) was measured using 8 items, such as ‘Pays attention to the emotions of others’; *Emotional Stability* (ES) was measured using 8 items, such as ‘Keeps calm when things don’t go well’; *Flexibility* (FX) was measured using 8 items, such as ‘Looks for regularity in life’ (Reversed); *Openmindedness* (OP) was measured using 8 items, such as ‘Seeks people from different backgrounds’; *Social Initiative* (SI) was measured using 8 items, such as ‘Is inclined to speak out’.

Stress was measured using a 10-item version of the Perceived Stress Scale (Cohen et al., 1983). Participants were asked ‘In the last two weeks how often have you felt...’ followed by items such as ‘you were unable to control the important things in your life.’ Participants responded using a scale ranging from 1 (never) to 7 (always).

Life Satisfaction was measured with the Satisfaction with Life Scale (SWLS; Diener et al., 1985), consisting of five items, such as ‘I am satisfied with my life,’ answered on a scale ranging from 1 (strongly disagree) to 7 (strongly agree).

Cultural Background was operationalized by asking students whether they possessed the Dutch nationality (1 = yes [local student], 0 = no [international student]). Those who possessed another nationality next to the Dutch nationality, were also categorized as local. Our sample included 198 local (46.6%) and 227 international students (53.4%).

Prior International Experience was measured using a single item, asking respondents whether they had ever lived outside their home country for more than 6 months consecutively (1 = yes, 0 = no). Our sample contained 44 students with prior international experience (10.4%).

Academic Performance was assessed by retrieving the students’ grade point average from the university administration, at the end of the academic year. In the Netherlands, a grading system is used that ranges from 1 to 10, where a grade of 5.5 or higher is considered passing. Mean GPA after year one was 7.20 (SD = 0.75; Range = 1 – 8.82).

Correlations, descriptive statistics and reliabilities of all the study variables are provided in the online supplementary materials (Appendices 1 and 2).

Missing data analysis

Because we experienced lower response rates in the second and third waves, we checked for the missingness mechanism, by comparing (using t-tests) participants who completed T1 only, with those who completed both T1 and T2. No significant differences were found on any of the study variables ($p > 0.05$). Next we compared those who completed T1 only, with those who completed T1 and T3 (irrespective of whether they also completed T2), which revealed two small differences. Respondents who completed both T1 and T3 were more likely to be international students ($t = -2.179$; $p = 0.031$), and score lower on academic performance ($t = -2.146$; $p = 0.033$). To control for these potential biases, we conducted all subsequent analysis using Full-Information Maximum Likelihood (FIML) to account for missing data, including academic performance and cultural background as auxiliary variables. This procedure allowed us to assume data to be missing at random (MAR; Graham, 2009).

Confirmatory factor analyses and invariance testing

CFAs were conducted to examine the configural and longitudinal invariance of the five MPQ dimensions. We examined if any residual correlations need to be added (based

on modification indices) to get sufficient model fit for the configural models at each time point. Potential correlations were examined individually by the researchers, to check for conceptual overlap. Next, we ran longitudinal invariance analyses for T1-T3. We assessed a) configural invariance, b) invariance of factor loadings, c) invariance of intercepts (on top of factor loadings), d) invariance of residual variances of the indicators (in addition to factor-loadings and intercepts), and e) invariance of factor-means across-time. To see if successive invariance models differed substantially in fit, we examined significance of the X^2 difference, as well as whether the models differed less than 0.01 in CFI, less than 0.015 in RMSEA, and less than 0.030 in SRMR (Putnick & Bornstein, 2016).

All analysis were run using the lavaan R-package. The fit indices for the configural models and the final models resulting from the invariance tests are provided in the online supplementary materials (Appendix 3). After adding covariances, all subscales of the MPQ-SF were found to be sufficiently reliable, and measured equally well across the three timepoints.

Assessing longitudinal development

To examine longitudinal development of the five MPQ dimensions as well as stress and life satisfaction, we first tested whether any changes that are observed in the variables are consistent across time points, and follow a linear trajectory, by fitting latent growth curve models (Fan, 2003). Results of these analyses can be found in the online supplementary materials (Appendix 4). For Stress, a latent growth curve model fit the data well, but showed no overall change over time (Mean slope = -0.049, SE = 0.038, $p = 0.198$). There is a significant amount of variance in the slope, however ($X^2(1) = 5.59$, $p = 0.018$), which shows that stress levels develop differently between respondents.

Latent growth curve models did not fit the data sufficiently well for Life Satisfaction, nor for any of the MPQ dimensions. This suggests that changes in these variables are not linear across time. As such, we decided to answer our research questions by assessing longitudinal development through pairwise comparison of effects between T1 and T2, as well as between T2 and T3, using latent difference scores.

Results

Longitudinal development of MPQ dimensions

To answer RQ1, we first examined the change in the five MPQ dimensions across the first semester ($\Delta T1-T2$), and tested whether the starting point (T1 score) was a predictor of this change. Next, we examined whether the change across semester 1 was a predictor of the subsequent change across the second semester ($\Delta T2-T3$). Gender and Age were included as control variables. Table 1 shows the results of these analyses. Due to the large number of relationships being tested in this study, we decided to be more conservative when interpreting p-values. When the p-value of an effect was found to be between 0.01 and 0.05, we also examined the effect size, to determine whether the effect could be meaningfully interpreted to answer our RQ.

Table 1 Standardized estimates of MPQ development and its effects on student outcomes ($n=425$)*

	Effect of T1			Effect of $\Delta T1-T2^{**}$		
	β	SE	p	β	SE	p
<i>Longitudinal Development</i>						
Cultural Empathy	-0.024	0.013	0.073	-0.538	0.032	<0.001
Emotional Stability	-0.034	0.014	0.015	-0.168	0.024	<0.001
Flexibility	-0.137	0.013	<0.001	-0.411	0.023	<0.001
Openmindedness	-0.034	0.016	0.036	-0.594	0.018	<0.001
Social Initiative	0.059	0.003	<0.001	-0.606	0.034	<0.001
Stress	-0.652	0.096	<0.001	-0.371	0.096	<0.001
Life Satisfaction	-0.482	0.069	<0.001	-0.333	0.101	<0.001
<i>Effects on Stress</i>						
Cultural Empathy	-0.051	0.088	0.563	-0.428	0.200	0.032
Emotional Stability	-0.305	0.090	<0.001	-0.225	0.206	0.275
Flexibility	-0.018	0.070	0.794	0.354	0.171	0.039
Openmindedness	-0.028	0.094	0.764	-0.055	0.162	0.734
Social Initiative	-0.144	0.084	0.088	-0.256	0.659	0.698
<i>Effects on Life Satisfaction</i>						
Cultural Empathy	0.003	0.091	0.978	-0.011	0.230	0.963
Emotional Stability	0.141	0.079	0.075	0.371	0.222	0.096
Flexibility	-0.046	0.073	0.529	-0.131	0.190	0.488
Openmindedness	0.018	0.097	0.851	-0.076	0.194	0.694
Social Initiative	0.077	0.087	0.376	-0.710	0.775	0.390
<i>Effects on Academic Performance</i>						
Cultural Empathy	0.137	0.062	0.014	0.141	0.113	0.012
Emotional Stability	-0.052	0.040	0.315	0.012	0.114	0.801
Flexibility	-0.044	0.040	0.381	0.002	0.111	0.965
Openmindedness	-0.036	0.066	0.567	0.009	0.106	0.869
Social Initiative	0.132	0.047	0.023	0.192	0.395	<0.001

* all effects are controlled for Gender and Age; **corrected for scores at T1

The results presented in Table 1 show that the T1 scores of ES, OP, and FX are negatively related to the amount of change in these factors between T1 and T2. However, for ES and OP, a relatively large p-value is found, coupled with a small effect size, prompting us to disregard these findings. As such we conclude that only for FX, students who scored higher at the start of the program, showed less improvement in the first semester than those who scored low, which could be an indication of ceiling effects.

For SI, the effect is positive, meaning that students who scored high on this dimension increased even more in the first semester. The T1 score of CE is not significantly related to change in this factor between T1 and T2.

In addition, we see that the amount of change between T1 and T2 is strongly negatively related to the amount of increase between T2 and T3 for all five dimensions, indicating that more change in the first semester is associated with smaller increases in the second semester. This strongly suggests the presence of ceiling effects in semester 2.

Longitudinal development of stress and life satisfaction

Similar to above, we also examined the longitudinal development of stress and life satisfaction. We see that T1 scores on both variables are significantly negatively related to changes between T1 and T2, indicating that students who experience more stress at the start of the program, are significantly less likely to increase stress levels over time, and those who already score high on life satisfaction at T1 are less likely to increase their satisfaction over time.

Furthermore, changes between T1 and T2 stress and life satisfaction are significantly negatively related to changes between T2 and T3, meaning that for both variables, higher levels of increase in scores during the first semester is related to lower levels of increase in scores in the second semester, and vice versa.

Effects of MPQ on student outcomes

To answer RQ2, we first examined whether the T1 scores on the five MPQ dimensions are related to the development of stress and life satisfaction, and whether the change in the first semester influences change in outcomes in the second semester. The results are also shown in Table 1.

Our findings show that T1 scores on ES are negatively related to changes in stress between T1 and T2, but T1 scores of the other four dimensions are not. Changes in CE scores between T1 and T2 are negatively related to changes in stress between T2 and T3. For FX, a positive relationship is found. For the latter two effects, p-values are between 0.01 and 0.05, coupled with relatively large effect sizes. Although we should exercise caution in interpreting these results, we feel it is important to mention the possible presence of these effects in the data. In sum, in the first semester, the dimension Emotional Stability appears to act as a buffer against an increase in stress levels. In the second semester, those students who have increased their Cultural Empathy, as well as those who display decreased Flexibility, are also more resistant to increasing stress levels.

When examining the effect of MPQ scores on Life Satisfaction, we find neither effects of T1 scores, nor of changes in the first semester. Initial levels and development of MPQ scores are not related to life satisfaction in this sample.

Next, we examined how T1 scores on the five MPQ dimensions, as well as changes in scores between T1 and T2, are related to students' academic performance at the end of the year. These results are also reported in Table 1. Across both semesters, scores on CE and SI are positively related to academic performance. For the other dimensions no relationship is found. Students who score high on CE and SI at the beginning of the program, as well as those who manage to increase their CE and SI scores across the first semester, perform better in their first year.

Effects of cultural background and prior international experience on MPQ development

To answer RQ3, we added cultural background (0=Local student, 1=International student) and prior international experience (0=no, 1=yes) as predictors to the model. Estimates of their effects on MPQ development are shown in Table 2.

For cultural background, we find no effects on T1 scores: both groups score similarly on all five dimensions at the start of the program. Furthermore, after correcting for earlier scores,

Table 2 Standardized estimates of effects of cultural background and prior international experience on MPQ development ($n=425$)*

	Effect on T1			Effect on $\Delta T1-T2^{**}$			Effect on $\Delta T2-T3^{***}$		
	β	SE	p	β	SE	p	β	SE	p
<i>Main Effects of Cultural Background</i>									
Cultural Empathy	-0.019	0.068	0.774	0.000	0.023	0.998	-0.004	0.021	0.830
Emotional Stability	0.079	0.067	0.237	0.008	0.025	0.756	-0.018	0.016	0.264
Flexibility	-0.046	0.068	0.502	-0.001	0.024	0.958	-0.001	0.014	0.955
Openmindedness	0.030	0.063	0.633	-0.002	0.027	0.927	-0.011	0.015	0.486
Social Initiative	0.064	0.067	0.336	0.004	0.005	0.414	-0.003	0.006	0.598
<i>Main Effects of Prior International Experience</i>									
Cultural Empathy	0.057	0.079	0.476	-0.023	0.027	0.396	0.009	0.024	0.699
Emotional Stability	-0.086	0.076	0.260	0.002	0.030	0.946	-0.014	0.018	0.424
Flexibility	0.009	0.077	0.908	0.019	0.027	0.480	0.011	0.017	0.527
Openmindedness	-0.031	0.073	0.672	-0.021	0.031	0.506	0.002	0.015	0.900
Social Initiative	-0.135	0.077	0.079	-0.011	0.006	0.066	0.002	0.007	0.819
<i>Interaction effects of Cultural Background x Prior International Experience</i>									
Cultural Empathy	-0.085	0.161	0.598	0.021	0.055	0.696	0.082	0.049	0.095
Emotional Stability	-0.110	0.157	0.484	-0.004	0.060	0.942	0.023	0.037	0.530
Flexibility	0.218	0.159	0.170	-0.040	0.056	0.475	-0.017	0.036	0.630
Openmindedness	-0.114	0.149	0.443	0.144	0.063	0.021	-0.024	0.032	0.443
Social Initiative	0.117	0.158	0.460	0.027	0.013	0.032	0.024	0.015	0.102

* all effects are controlled for Gender and Age;

** corrected for scores at T1; *** corrected for $\Delta T1-T2$

cultural background is not related to changes across either semester. In sum, on average, local and international students appear to score similarly on all dimensions of MPQ.

Next, adding Prior International Experience (0 = no, 1 = yes) to the model from RQ1, we see that there are again no effects on the T1 scores, nor on changes across either semester. Both groups score similarly on all five dimensions at the start of the program, and develop in similar ways across the academic year.

Finally, we examined interaction effects between Cultural Background and Prior International Experience. We find a moderately strong interaction effect on the changes between T1 and T2 for OP ($\beta=0.144$ SE=0.063; $p=0.021$), and a weak interaction effect on changes between T1 and T2 for SI ($\beta=0.027$, SE=0.013, $p=0.032$). We find no significant interaction effects on the change between T2 and T3 (after correcting for the change between T1 and T2).

Figures 1 and 2 display the changes in OP and SI for all four groups (local and international students, with and without prior international experience). For both dimensions, a similar pattern is observed: International students appear to display no significant change in OP or SI, regardless of whether they have prior international experience. However, for local students, prior experience has a significant effect. Local students with prior international experience behave similar to international students, in that they display no change in OP or SI across the semester. However, local students with no prior international experience display a significant increase in both OP and SI across this time period.

Fig. 1 Development of Open-mindedness between T1 and T3 for local and international students with and without prior international experience

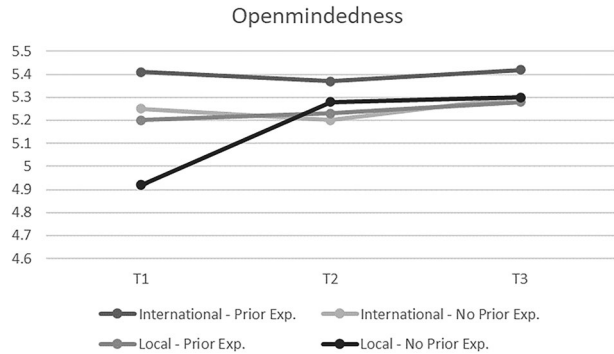
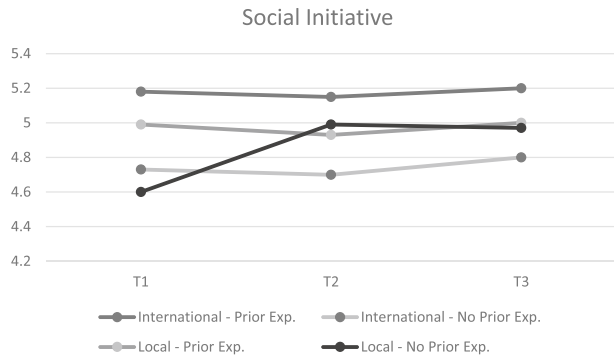


Fig. 2 Development of Social Initiative between T1 and T3 for local and international students with and without prior international experience



Discussion

Overview of findings and implications

The first aim of this study was to investigate the development of multicultural personality among first-year students enrolled in an international university program, through a three-wave longitudinal design. Our findings confirm that scores on the MPQ dimensions may be dynamic over time. Although mean differences between time points were not significant, we did find variance on the individual level, meaning that some students' scores developed across the year, whereas others' did not. Furthermore, our findings revealed that students who started the year with higher scores on flexibility improved less on that dimension across the first semester (T1-T2), whereas those who started with high social initiative improved more. No effects were identified for the other three dimensions. When examining changes across the second semester (T2-T3) we see consistent negative relationships with the change in semester 1. This means that for all five dimensions of the MPQ, students who improved more during the first semester, subsequently showed less improvement during the second semester. This is an indication that ceiling effects may be present in the development of MPQ scores, which is consistent with the *maturity-stability principle* that is observed in development of other personality traits within this age group (Donnellan et al., 2007).

The second aim of the study was to examine how the development of MPQ scores related to the development of relevant outcomes. Consistent with previous research (Ward et al., 2004) our findings reveal that emotional stability acts as a buffer for stress in the first

semester, suggesting that this trait is especially relevant in overcoming initial culture shock. However, this effect dissipates in the second semester, where cultural empathy appears to reduce stress, and flexibility is related to higher stress. A possible explanation for these findings is that later in the year, students are no longer dealing with the stress of a new intercultural environment, but instead are facing the regular day-to-day pressures of the academic environment and interacting with fellow students. Being empathic towards others, and taking a more structured approach to life appear to aid in coping with such stressors.

None of the dimensions show any significant relationships with life satisfaction, suggesting that multicultural personality is less important for the overall well-being of students than was expected based on prior research (Van Oudenhoven & Van der Zee, 2002). This calls into question whether being effective in an intercultural environment should be equated with being happy in such an environment. Future studies should investigate different subconstructs of life satisfaction, such as psychological well-being and study satisfaction, to tease out the more nuanced effects of intercultural competence on a wider range of affective outcomes.

Finally, we found significant positive effects of cultural empathy and social initiative on academic performance (GPA), suggesting that initiating contact with other students, and being able to understand and empathize with individuals from a different culture, are important for academic success in an international study environment. It is not unlikely that these effects are mediated through (socio-cultural) adaptation processes, as shown in other studies (Rienties et al., 2012), but this should be confirmed through follow-up studies.

The third aim of the present research was to examine MPQ development among local and international students, and among those with or without prior international experience. Interestingly, no significant main effects were found, but we did reveal an interaction of the two predictors on openmindedness and social initiative. The only group who appears to develop significantly on these two dimensions are local students without prior international experience. They start the year with lower scores, but catch up to the other students during the first semester. This could be explained through self-selection processes – young adults who score high on openmindedness and social initiative are more likely to choose to study abroad (Yakunina et al., 2012) – and partly through intercultural learning from previous mobility experiences (Zimmermann et al., 2021). The finding that students without such experiences benefit most from the international study environment, however, is a new and interesting addition to the literature, underlining the importance of internationalization at home. Traditionally, more attention was given to international students, who were expected to participate in active intercultural learning. However, our findings suggest that the internationalization process might have more benefits for members of the host society, allowing them to catch up to the levels of intercultural competence that international students already display at the start of the program. This, in turn, may have serious implications for how university management or policy makers should approach the concept of internationalization. Whereas critics of internationalization in higher education often point towards the budget and effort spent on educating individuals from abroad (de Wit & Altbach, 2021), the results of our study suggest that these investments actually have direct benefits for members of the host society, and may be a worthwhile pursuit for institutes of higher education in many different context and locations.

Limitations and future research directions

The most important limitation of the present study is its reliance on self-report for the measurement of multicultural personality and outcome variables. The measures that were used in this study have been specifically validated for use in this context, which increases

our confidence in the accuracy the scale. However, we recommend that future researchers also include other-ratings of multicultural personality or use non-survey-based measures, such as situational judgement tests or vignette studies (e.g. Carmona et al., 2022).

Another important limitation of the study is that we were unable to take into account the specific cultural background of the respondents in our analyses. Research has shown that students who move abroad may display different adaptation processes, depending on their individual background, or the (perceived) cultural distance between home and host society (e.g. Geeraert et al., 2019). Unfortunately, due to limited sample sizes of specific national or cultural groups in our sample, we were unable to examine such effects. Therefore, the present study makes use of only two aggregated groups, consisting of local vs. international students, who are distinguished by whether or not they chose to move abroad for their tertiary education. We hope that future scholars may be able to replicate our study using larger samples of specific national or cultural groups, to conduct a cross-national or cross-cultural comparison of multicultural personality development. In similar vein, our subsample of local students also included those who may identify as bi- or multicultural, for example due to their family's migration background, or growing up in a culturally diverse environment within the host society. As above, the sample size of our study was not sufficient to be able to take these differences into account in our analyses. However, examining the influence of cultural heritage and/or migration background of local students on their multicultural personality development is an important future research direction.

Finally, the study presented in this paper adds to the literature by examining multicultural personality development across three time points in one academic year. On an aggregated level, we find only very little changes in MPQ scores across this period. A possible explanation for this finding could be the maturity-stability principle, which suggests the presence of ceiling effects in personality development. However, we cannot rule out that a possible significant increase may only become detectable after a longer time period. To further understand the effects of international education on multicultural personality development, we recommend that scholars conduct studies over an even longer time frame.

Conclusion

The present study investigated how multicultural personality traits of students in an international university program develop over time, how they relate to student outcomes, and which factors enhance or inhibit their growth. Our results confirm that multicultural personality traits may be dynamic over time, and that under the right conditions, studying in an international environment may contribute to their development. This underlines the importance of international education for enhancing future generations' intercultural competences. Surprisingly, it appears that local students, particularly those who have not previously spent a significant amount of time outside their home country, benefit the most from the international classroom. This finding suggests that institutes of higher education should focus on internationalization at home, and make use of the previous experiences and competences that students may have to enhance intercultural learning.

Supplementary Information The online version contains supplementary material available at <https://doi.org/10.1007/s10734-023-01052-6>.

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Data Availability The data that support the findings of this study are not publicly available due to their containing information that could compromise the privacy of research participants. The anonymized data may be requested for verification purposes, through the Ethics Review Board of the corresponding author's institution.

Declarations

Conflict of interest The authors declare that they have no conflict of interest.

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