

# Effects of living arrangements on well-being, perceived conflict, and intergroup attitudes for local and international students: Results from a field intervention

Ya Hui Michelle See<sup>1</sup>  | Walter Patrick Wade<sup>2</sup> 

<sup>1</sup> National University of Singapore, Singapore

<sup>2</sup> Georgia State University, Atlanta, Georgia, USA (Email: [wwade@gsu.edu](mailto:wwade@gsu.edu))

## Correspondence

Ya Hui Michelle See, Department of Psychology, Faculty of Arts and Social Sciences, National University of Singapore, Block AS4, #02-07, 9 Arts Link, Singapore 117570.

Email: [psysyhm@nus.edu.sg](mailto:psysyhm@nus.edu.sg)

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## Abstract

Immigration may be perceived by members of host countries as a threat, with psychological and material impacts on immigrants' well-being: it may reinforce negative stereotypes, promote discrimination, or even encourage violence. One means of alleviating such prejudice is increased intergroup contact. However, under certain conditions, increased contact can produce harmful outcomes as intergroup contact may provide opportunities for positive and negative relationships between ingroup and outgroup members. Further, relatively little research has examined intergroup contact between native host country members and immigrants in Asian societies, and in particular, in Singapore. To address this gap, the current research examined the effects of separating, clustering, or integrating international students from local ones at two Singaporean universities. We assessed the degree to which different living arrangements impacted local and international students' intergroup contact, satisfaction with university life, perceptions of conflict, and intergroup attitudes. The findings suggest that those who are interested in improving intergroup relations via influencing the social ecology of majority and minority residents should provide opportunities for integration over separation or enclaves.

## INTRODUCTION

Migration has played a critical role in shaping national futures. According to the United Nations International Organization for Migration (2019), there are an estimated 272 million migrants globally, with a disproportionate number of migrants moving to developed nations in North America and Europe. In Southeast Asia, a significant population flows to Singapore, where approximately 28.9% of the population are non-residents and an additional 9.2% are permanent residents (Department of Statistics Singapore, 2020). This immigration has expanded Singapore's labor force by attracting transnationally mobile global "talent" into skilled and corporate jobs as well as temporary "nonresident" labor in unskilled positions (Yeoh & Lin, 2012). Singapore's multiculturalism and diversity have been heightened by this migration, and maintaining current levels plays a part in the country's multi-pronged responses to national problems such as economic competitiveness and an aging population (Yeoh, 2013).

As in other countries, however, the encouragement of migration to Singapore has been an issue of public concern. In January 2013, the government's population white paper generated nationwide debate about the pace and impact of immigration to Singapore (Toh, 2013). Immigration continued to be an important issue in the 2015 and 2020 General Elections (Baker, 2015; Low, 2020), and is facing additional scrutiny in the wake of the COVID-19 pandemic (Loh, 2020). Arguments against migration have focused on increasing competition for jobs, concerns about the assimilation of migrants into Singapore's multicultural social fabric, and the stresses placed on national infrastructure by a rising population.

In several Asian contexts, migrants face serious challenges to integration into the host society. In Hong Kong, mainland Chinese migrants face challenges with their integration that are shaped by hostility between themselves and local Hong Kong residents (Tong et al., *in press*). Similarly, the integration of North Korean migrants in South Korea is hindered by problems with social relationships between migrants and residents (Yoon, *in press*). In Singapore, individual perceptions of the possible threat posed by migrants may have psychological and material impacts on immigrants' well-being (Ramsay & Pang, 2017). Psychological research has found that such perceptions may reinforce negative stereotypes, increase intergroup anxiety, and worsen intergroup relations (Stephan et al., 2005; 2009; Stephan & Stephan, 2000). One highly researched means of improving intergroup relations is increased intergroup contact (Allport, 1954; Pettigrew & Tropp, 2011). Indeed, the hypothesis that intergroup contact can improve intergroup relations has been described as a "fundamental cornerstone of twentieth-century policymaking" (Hodson & Hewstone, 2013, p. 3; see also Pettigrew, 2021).

Given that relatively little research has been conducted on intergroup contact between host country residents and migrants in Asian societies, including in Singapore, the current research examines the effects of living arrangements on well-being and intergroup relations for international and local students. Addressing these questions in Singapore could yield important insights because, although Singapore is similar to many other countries in having issues related to social integration, it is relatively unique in that individuals navigate intergroup relations in a country where institutional support for multiculturalism and immigration is strong (Ortiga, 2015; Roets et al., 2015) and where locals and migrants often have shared ethnic backgrounds (Ho, 2006; cf. Lee & Chou, 2018; Lee et al., 2016). Thus, the findings from this field experiment would be a first step toward comparing Singapore with other countries, while also providing implications for understanding contact theory more generally. Moreover, given that foreign residents continue to

constitute a significant proportion of the total population, their relationship with host citizens and their well-being has been and will continue to be of high concern to policy makers.

More specifically, the findings from the current research can shed light on the integration of local and international students in the university setting. As Peacock and Harrison (2009) found in the context of two U.K. universities, local students may perceive international students as culturally distant and self-excluding, thus limiting opportunities for meaningful contact. Related research has found that local students at these universities were likely to perceive international students from the perspective of passive xenophobia, that is, a reluctance to interact with international students by choice (Harrison & Peacock, 2010). Similar exclusion of international students from local student life has been documented in the U.S. (Williams & Johnson, 2011) and in Hong Kong (Tian, 2019). Thus, the current research may yield findings that are useful for socioecological interventions aimed at improving well-being and intergroup relations in this context.

## INTERGROUP CONTACT

According to the contact hypothesis, intergroup contact can lead to positive intergroup relations by reducing prejudice, which is conceptually defined as overall negative attitudes toward an individual based on their group membership (Allport, 1954). Although extant research on the contact hypothesis seems to support the effectiveness of intergroup contact for reducing prejudice (see Pettigrew & Tropp, 2006), further developments suggest that there are nuances to the consequences of intergroup contact on well-being and intergroup relations. On the one hand, actual intergroup interactions have been found to increase anxiety and stress (Hayward et al., 2017; Hyers & Swim, 1998; Shelton, 2003), perceptions of threat (e.g., Blascovich et al., 2001; Shelton et al., 2006), prejudice (Barlow et al., 2012), and intergroup bias (Paolini et al., 2006). On the other hand, intergroup contact has also been found to lead to lower anxiety (e.g., Islam & Hewstone, 1993; Paolini et al., 2004), prejudice (e.g., Binder et al., 2009; Paolini et al., 2004; Van Laar et al., 2005) and even the seeking of more subsequent contact (e.g., Binder et al., 2009).

Mixed findings regarding the consequences of contact highlight the importance of contextual factors such as equal status between groups, cooperation between groups, pursuit of common goals, and support of interaction by authorities as favorable conditions for intergroup contact to improve intergroup relations (Allport, 1954). At the same time, relatively new perspectives have emerged for a more complete picture of the outcomes of intergroup contact. For example, one perspective is that for both majority and minority members, there is a tension between the effects of contact on well-being and prejudice. That is, although contact can reduce prejudice, this can come at the expense of the well-being of both majority and minority group members. Such tension occurs because, for majority members, efforts to avoid being prejudiced are also accompanied by stress and anxiety during intergroup interactions. For minority members, interacting with majority members who seem less prejudiced can lead to higher expectations about the interaction, and ironically, less positive experiences (Shelton, 2003). Likewise, although majority and minority members can potentially increase their well-being via identification with an ingroup, such identification can also result in greater prejudice toward the outgroup (Sidanius et al., 2004).

One implication of the “tension” perspective described above is that, to the extent that the stress and anxiety during intergroup interactions can be mitigated or even reduced during intergroup contact (e.g., Pettigrew & Tropp, 2008), then intergroup contact should lead to positive consequences for both well-being and intergroup attitudes. This implication is complemented by the socioecological perspective (Oishi, 2014; Oishi & Graham, 2010), which advances the view that

physical, societal, cultural, and interpersonal environments exert important effects on human psychology and behavior. Consistent with this view, the positive relationship between contact and acceptance of minority groups has been found to be stronger in cultures that support egalitarian values relative to cultures that emphasize hierarchy (Kende et al., 2018). As another example, scholars have emphasized the role of cultural ideologies such as multiculturalism for the understanding of well-being and intercultural contact (e.g., Noor & Leong, 2013; Sasaki & Vorauer, 2013; Ward et al., 2016), with some research suggesting that multicultural orientation positively predicted the frequency of contact, well-being, and positivity toward the other group among both Hong Kong locals and mainland Chinese immigrants (Chen et al., 2016). Therefore, we suggest that examining the physical living arrangements in one's environment, while also considering the context of Singapore, can be a fruitful means of testing the consequences of intergroup contact.

## RESIDENTIAL DIVERSITY

Research has demonstrated mostly positive consequences of diversity in one's living arrangement. For instance, individuals who live in more racially diverse neighborhoods have been found to be more prosocial in general than those who live in less diverse neighborhoods, due to the former's identification with all humanity (Nai et al., 2018). Consistent with the contact hypothesis, the positive benefits of residential diversity have been found to extend to intergroup attitudes. For example, compared to those who were assigned to a room-mate of the same ethnicity, individuals who were randomly assigned to a room-mate of a different ethnicity tended to exhibit less prejudice (Van Laar et al., 2005), and less intergroup anxiety and automatic expressions of prejudice (Shook & Fazio, 2008). Further research has also identified the availability of resources as a boundary condition for the positive impact of residential diversity on intergroup relations. That is, a neighborhood's racial diversity, as indexed by the non-White percentage of the population, may have positive or negative effects on perceptions of intergroup conflict depending on whether resources are relatively scarce or abundant, such that neighborhood diversity increased perceptions of intergroup conflict in areas where Whites faced higher unemployment rates, but diversity actually led to *less* perceptions of conflict in areas where Whites had lower unemployment (Knowles & Tropp, 2018).

## ENCLAVES

While integration and separation might be considered as two opposite extremes in intergroup living arrangements, another arrangement that has been examined, albeit to a less extent, is enclaves. For example, some research has examined the relatively spontaneous development of enclaves based on political orientation (Motyl et al., 2014), ethnic identification (Sidanius et al., 2004) or immigrant student status (Fincher & Shaw, 2011). Of relevance to the question of whether such enclaves should be encouraged or discouraged, researchers have also examined the consequences of enclaves. Overall, enclaves lead to undesirable consequences for intergroup relations. For instance, at universities, minority student organizations and the fraternity/sorority system function as minority or majority enclaves, respectively, and membership in such organizations leads to perceptions of greater intergroup conflict among both majority and minority students (Sidanius et al., 2004). Furthermore, Siu et al., find that migrants from China and Vietnam face

challenges integrating into Japanese society, especially when such migrants are accommodated in isolated living arrangements.

At the same time, enclaves seem to have positive and negative implications for well-being. For instance, having reserved spaces on campus for ethnic minorities makes them feel more welcomed and supported, but the proposal of similar reserved spaces for majority White students made them feel *less* supported (Kirby et al., 2020). Furthermore, even for minority students, enclaves can also make individuals feel greater identification with their ethnic group but also greater victimization (Sidanius et al., 2004).

Various possibilities have been proposed for the observed and potential differences in the drawbacks (versus benefits) of enclaves. For instance, one perspective is that the broader cultural context matters, such that enclaves have negative or positive effects depending on whether the environment beyond the enclave (e.g., the university overall) is a multicultural or homogeneous one (Kirby et al., 2020; Sidanius et al., 2004). In addition, enclaves can seem undesirable or desirable, depending on the alternative. That is, it is possible that enclaves are undesirable when one compares them to integrated settings even if they may be relatively desirable when compared to separated settings.

## CURRENT RESEARCH

While prior research has made important advances in our understanding of an individual's social ecology on well-being and intergroup relations, the current experiment aimed to build upon such research and enhance our understanding by examining three types of living conditions simultaneously. That is, the present study posed the following question:

**RQ:** How do separated, enclave, and integrated living arrangements influence intergroup contact, satisfaction with university life, perceived group conflict, and intergroup attitudes over time?

We assessed two common indicators of intergroup contact — frequency and quality of contact — as proximal consequences of different living arrangements (Barlow et al., 2012; Hayward et al., 2017; Islam & Hewstone, 1993). We examined satisfaction with university life, instead of general life satisfaction, as a proxy for the personal outcome of well-being, because satisfaction with university life would correspond more closely with the manipulation of living arrangements on campus among participants. We assessed perceived group conflict and intergroup attitudes as indicators of intergroup relations. In the context of diversity in one's social ecology, perceptions of group conflict involve the degree to which the outgroup threatens one's own access to resources (e.g., Knowles & Tropp, 2018; Sidanius et al., 2004), and the degree to which misunderstandings occur (e.g., Shelton et al., 2014).

Similar to prior research, we examined living arrangements in residence halls in two universities, as such residences fulfil the criteria for the benefits of intergroup contact (Allport, 1954). These criteria include equal status, cooperation, common goals, and support of authorities. Students sharing a residence are believed to be of equal status (as compared to say, a student and their professor). The university residence hall aims to be a cooperative environment, with individuals working together to achieve a pleasant and supportive living situation. The university acts as an authority that is supportive of intergroup contact, while university representatives oversee the housing system and assign students to their rooms. At the same time, as far as we know, this experiment is the first to simultaneously examine all three types of living arrangements in a field experiment, and thus, has the potential to address the seemingly mixed findings regarding enclaves in prior research.

We considered various possibilities for the effects of living arrangements on well-being and intergroup relations. On the one hand, to the extent that the broader cultural context of Singapore encourages a multicultural orientation, it seemed possible that, compared to the other two living conditions, integration would lead to benefits across the various outcomes, that is, greater well-being, less perceived conflict and more positive intergroup attitudes for both international and local students (e.g., Chen et al., 2016). Put differently, we expected that enclaves might lead to negative outcomes especially when compared against the integrated living condition. On the other hand, it seemed possible that the tension between well-being and intergroup relations would be maintained, such that for both local and international students, integration would lead to a mix of negative and positive consequences, in particular, lower well-being but more positive intergroup attitudes, compared to the other two living conditions (e.g., Shelton, 2003).

## METHOD

### Participants and design

In the 2015/2016 academic year, participants ( $N = 154$ ; 107 Singapore citizens, one Singapore Permanent Resident, and 46 international students) from two universities in Singapore who had been randomly assigned to one of three living arrangements—*separated*, *enclave*, and *integrated*—completed up to two data collection sessions in exchange for monetary compensation. Among the Singapore citizens, 94.4% were Chinese, 3.7% Malay, and 1.9% Indian. The Singapore Permanent Resident was Chinese. Among the international students, 87.0% were Chinese, 4.3% Vietnamese, 4.3% Indian, and 4.3% others (e.g., Korean).

Collecting data in two sessions allowed us to explore whether the influence of living arrangements emerged earlier or later, and whether such influence was sustained or changed over time. Recruitment flyers were distributed in both English and Mandarin to maximize participation. Following prior research (e.g., Shook & Fazio, 2008), participants were informed that the study examined students' adjustment to university life. Nine participants (five females; four males) did not return for the second session, and they were excluded from further analyses.

Thus, the study was a 3 (living arrangement: separated or enclave or integrated)  $\times$  2 (session: time 1 or time 2) mixed design where living arrangement was a between-subjects factor and the time of the session was a within-subjects factor. Power analyses indicated that 46 participants per condition would provide 80% power to detect an average effect size ( $d = .45$ ) in social psychology (Judd, Westfall, & Kenny, 2017). At the same time, because only two residence halls agreed to the random assignment of students to these three conditions, and the agreement was only for one academic year, the eligible participant pool was restricted. Thus, we sought to recruit at least 46 participants per living condition, but we also tolerated what ended up being a smaller sample size in the separated condition (see Cortland et al., 2017; Finkel et al., 2015).

The separated condition consisted of residents who lived on floors where almost everyone was a Singaporean ( $n = 40$ ). The enclave condition consisted of residents who lived on floors where international students lived in rooms that were clustered together as enclaves ( $n = 40$ ). The integrated condition consisted of residents who lived on floors where international students and Singapore citizens were next-door neighbors with one another ( $n = 65$ ). Participants completed the same measures in both sessions, and all materials were completed on a laptop in the privacy of a communal room in their residential hall. Within each session, the same variables were measured:



frequency and quality of interactions, satisfaction with university life, perception of conflict, and intergroup attitudes. All materials and items were in English.

## Measures

### Frequency and quality of interactions

Participants were asked how frequently they interacted with outgroup members in their residence hall. That is, Singaporean students were asked about their interactions with foreign students, and international students were asked about their interactions with Singaporean students. Responses were provided on 5-point scales (1 = *seldom or not at all*; 2 = *occasionally—about once in a few months*; 3 = *somewhat frequently—about once a month*; 4 = *quite frequently—about several times a month*; 5 = *very frequently—daily or several times a week*). Participants also reported on the quality of those interactions (1 = *negative*, 2 = *neutral*, 3 = *positive*).

### Satisfaction with university life

Following prior research (Shelton et al., 2014), participants indicated how they felt about their life as a university student (1 = *horrible*; 7 = *excellent*), and how satisfied they were with their life as a university student (1 = *extremely dissatisfied*; 7 = *extremely satisfied*).

### Perception of conflict

Perceived group conflict has been measured as a way to assess intergroup relations (e.g., Knowles & Tropp, 2018; Sidanius et al., 2004). Participants reported the extent to which their residential neighborhood was free of misunderstanding between neighbors and the extent to which their neighborhood was free of conflict between neighbors on a 5-point Likert-type scale (1 = *strongly disagree*; 3 = *neither disagree nor agree*; 5 = *strongly agree*). Responses were reverse-coded and then averaged, so higher scores meant greater perceptions of conflict.

### Intergroup attitudes

Singaporeans were presented with a 22-item scale that was adapted from prior literature (Brigham, 1993), which assessed their attitudes toward international students. Examples include “If I were to have a roommate, it would not bother me if my roommate was a foreigner,” and “I would rather not have foreigners be my neighbors (reverse-coded).” International students were presented with the same items, except that these items assessed their attitudes toward Singaporeans. Participants provided responses on a 7-point scale (1 = *strongly disagree*; 4 = *neither disagree nor agree*; 7 = *strongly agree*). Where appropriate, items were reverse-coded such that on the whole, higher scores, which were averaged, reflect more positivity toward the outgroup.

## RESULTS

Data were subject to mixed ANCOVAs: 3 (living arrangement: separated or enclave or integrated) x 2 (session: time 1 or time 2) where living arrangement was a between-subjects factor and the time of the session was a within-subjects factor. Most participants completed Time 1 data collection at the beginning of Semester I (i.e., September 2015) and Time 2 data collection in the middle of Semester II (i.e., February and March 2016). The time period between Time 1 and Time 2 was included as a covariate in all analyses.<sup>1</sup> The time period between the first and second session ranged from 15 to 234 days ( $M = 140.69$ ,  $SD = 48.93$ ).<sup>2</sup>

For exploratory purposes, and due to small cell sizes, we also conducted separate analyses for Singapore citizens and international students, where data from Singapore citizens were subject to a 3 (living arrangement: separated or enclave or integrated) x 2 (session: time 1 or time 2) mixed ANCOVAs while data from international students were subject to 2 (living arrangement: enclave or integrated) x 2 (session: time 1 or time 2) mixed ANCOVAs.

### Frequency of interactions

Among all participants, there were no main effects of session or living arrangements,  $ps > .44$ . Of importance, there was a marginally significant interaction involving the frequency of interactions with outgroup members in the residence hall,  $F(2, 141) = 2.98$ ,  $p = .054$ ,  $\eta_p^2 = .41$  (see Table 1 and Figure 1). At Time 1, there were fewer intergroup interactions for separated participants than integrated participants,  $p = .02$ . Those in the enclave condition did not differ from the other two conditions,  $ps > .17$ . At Time 2, there were no differences between the living conditions,  $ps > .23$

Analyzed differently, the frequency of interactions with outgroup members increased from Time 1 to Time 2 among separated participants,  $p = .02$ . There was also a marginal tendency for the same trend among enclave participants,  $p = .07$ , although this trend did not reach the conventional level of statistical significance. However, integrated participants did not report any change in the frequency of their interactions with outgroup members,  $p = .51$ . Taken together, the impact of living arrangement on frequency of interactions emerged early but was not sustained over time. There were no significant effects when only international students or only Singaporean students were examined,  $ps > .12$

<sup>1</sup> We tested for a curvilinear relationship between exposure duration and various outcomes as Time 2. The results showed that there was no curvilinear relationship,  $ps > .29$ . One exception was frequency of interactions, where exposure duration led to less and then more interactions as time passed. However, we note that the ANCOVA showed that the frequency of interactions was only impacted by living arrangements in Time 1 and not Time 2; therefore, it should not be possible for exposure duration to influence the Time 1 finding.

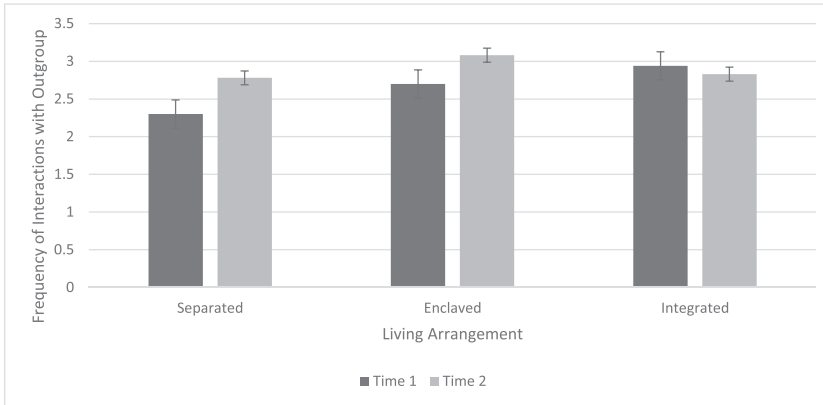
<sup>2</sup> When exposure time was centered in these mixed ANCOVAs, the results remained the same, with two exceptions. First, the main effect of session on frequency of interactions became significant, such that frequency was higher in Time 2 ( $M = 2.89$ ,  $SE = .11$ ) than Time 1 ( $M = 2.65$ ,  $SE = .11$ ),  $F(1, 141) = 4.84$ ,  $p = .03$ . Second, the main effect of session on perceived conflict became significant, such that perceived conflict was higher in Time 2 than Time 1 ( $M = 2.35$ ,  $SE = .08$ ) than Time 1 ( $M = 2.11$ ,  $SE = .07$ ),  $F(1, 141) = 9.66$ ,  $p = .002$ . Of relevance to the current research, the results for living arrangement or the living arrangement x session interaction remained the same.



**TABLE 1** Mean frequency of interactions with outgroup in residence hall

	Time 1	Time 2	<i>n</i>
Separated	2.30 <sub>b</sub> (1.32)	2.78 <sub>a</sub> (1.42)	40
Enclave	2.70 <sub>a</sub> (1.32)	3.08 <sub>a</sub> (1.25)	40
Integrated	2.94 <sub>a</sub> (1.32)	2.83 <sub>a</sub> (1.27)	65

Note. The higher the mean, the higher the frequency of interactions between neighbors. Means with different subscripts *in the same column* differ significantly at  $p < .05$ . In this and all tables, *SDs* are in parentheses.

**FIGURE 1** Frequency of interactions with outgroup as a function of living arrangement and time among all participants. Higher values mean more frequent interactions

## Quality of interactions

No significant results were obtained for quality of interactions in the residential hall,  $ps > .12$ ,  $\eta_p^2s < .03$ . The same was true when only international students or Singaporean participants were examined,  $ps > .13$

## University life satisfaction

Overall, there was no main effect of session,  $p = .48$ . Thus, life satisfaction did not differ depending on the time of data collection. However, of importance, there was a significant main effect of living arrangement,  $F(2, 141) = 4.28$ ,  $p = .01$ ,  $\eta_p^2 = .06$ . Participants in the separated condition had lower university life satisfaction ( $M = 4.76$ ;  $SE = .14$ ) compared to those in the other two groups ( $M_{\text{enclave}} = 5.30$ ;  $SD_{\text{enclave}} = .14$ ;  $p = .02$ ;  $M_{\text{integrated}} = 5.24$ ;  $SD_{\text{integrated}} = .11$ ;  $p = .02$ ). Also of relevance was the lack of an interaction effect,  $p = .95$ . In other words, the impact of residential arrangements on participants' satisfaction with their university life emerged early in the academic year, and was sustained over the academic year.

Among Singaporeans, there was a significant main effect of living arrangement,  $F(2, 96) = 3.51$ ,  $p = .03$ ,  $\eta_p^2 = .07$ . Singaporeans had lower university life satisfaction in the separated condition ( $M = 4.82$ ;  $SE = .16$ ) compared to the enclave condition ( $M = 5.41$ ;  $SE = .18$ ),  $p = .047$ . However, Singaporeans did not have lower life satisfaction in the separated condition compared to the integrated condition ( $M = 5.26$ ;  $SE = .15$ ),  $p = .13$ . No differences in university life satisfaction emerged for international students in the enclave condition versus the integrated condition,  $p = .55$ .

## Perceived conflict

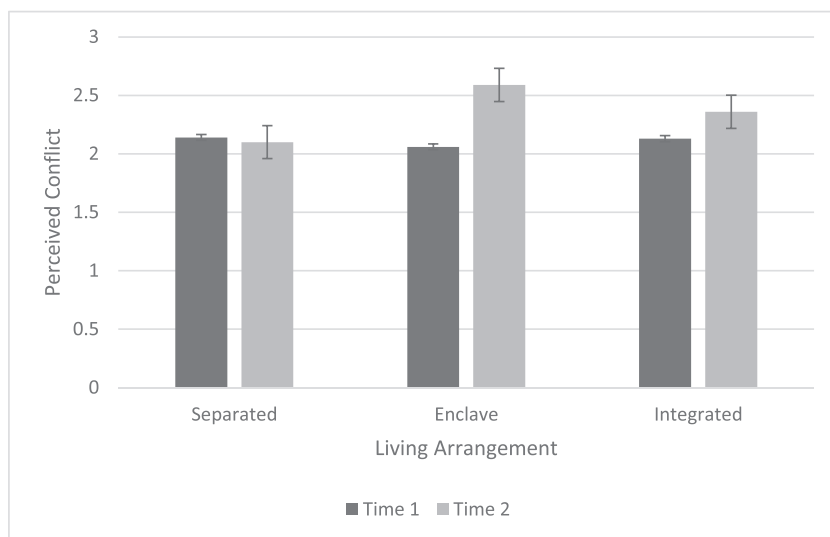
Among all participants, there were no main effects of data collection or living arrangements,  $ps = .30$ . Of more relevance, there was a significant interaction effect, such that the effect of living arrangement depended on time,  $F(2, 141) = 3.87, p = .02, \eta_p^2 = .05$  (see Table 2 and Figure 2). At Time 1, participants in the three groups did not differ from one another,  $ps > .69$ , but at Time 2, participants who were in the enclave condition perceived more conflict than those in the separated condition,  $p = .02$ . Analyzed differently, participants in the enclave condition perceived more conflict over time,  $p < .001$ . Participants in the separated condition did not change their perceptions of conflict over time,  $p = .79$ . Participants in the integrated condition perceived more conflict over time, but to a smaller extent than enclaved participants,  $p = .04$ .

Among Singaporeans and international students, similar interaction trends occurred. Importantly, the trend was due to participants in the enclave condition perceiving more conflict over time, regardless of whether they were Singaporean,  $p = .01, \eta_p^2 = .07$ , or international,  $p = .03, \eta_p^2 = .13$ . Interestingly, Singaporeans in the integrated condition perceived more conflict over time,  $p = .03, \eta_p^2 = .05$ , but international students in the same living condition did not,  $p = .65, \eta_p^2 = .01$ .

**TABLE 2** Mean level of perceived conflict

	Time 1	Time 2	<i>n</i>
Separated	2.14 <sub>a</sub> (.76)	2.10 <sub>a</sub> (.63)	40
Enclave	2.06 <sub>a</sub> (.87)	2.59 <sub>b</sub> (.97)	40
Integrated	2.13 <sub>a</sub> (.89)	2.36 <sub>a</sub> (.95)	65

*Note.* The higher the mean, the higher the level of perceived conflict between neighbors. Means with different subscripts *in the same column* differ significantly at  $p < .05$ . SDs are in parentheses.



**FIGURE 2** Level of perceived conflict as a function of living arrangement and time among all participants. Higher values reflect greater conflict

## Intergroup attitudes

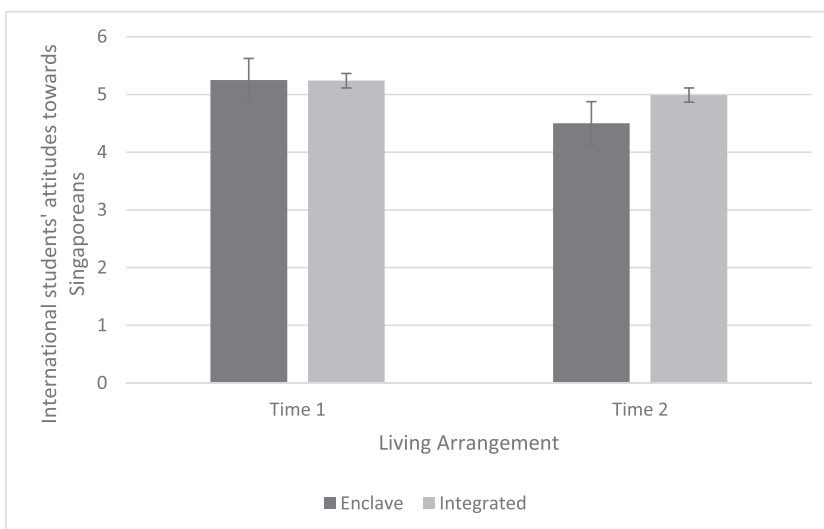
There was no main effect of living arrangement,  $p = .30$ . However, a main effect of session indicated that attitudes toward the outgroup were less positive at Time 2 ( $M = 5.12$ ,  $SE = .06$ ) than Time 1 ( $M = 4.94$ ,  $SE = .06$ ),  $p = .001$ ,  $\eta_p^2 = .08$ . This decrease in positivity was not moderated by living arrangement,  $p = .28$ .

Interestingly, among international students, there was a significant interaction,  $p = .04$ ,  $\eta_p^2 = .11$  (see Table 3 and Figure 3). Decomposing this interaction revealed that at Time 1, international students were equally positive toward Singaporeans regardless of their living condition,  $p = .99$ , but at Time 2, their positivity for Singaporeans was lower in the enclave condition than the integrated living condition,  $p = .048$ . Analyzed differently, there was a significant decrease in positivity toward Singaporeans among enclave international students from Time 1 to Time 2,  $p < .001$ . In comparison, the decrease in positivity among integrated international students was a marginally significant trend,  $p = .06$ . No significant effects were observed in the separate analysis of Singaporean students,  $ps = .28$ .

**TABLE 3** Mean attitudes toward Singaporeans among international students

	Time 1	Time 2	<i>n</i>
Enclave	5.25 <sub>a</sub> (.47)	4.50 <sub>b</sub> (1.00)	13
Integrated	5.24 <sub>a</sub> (.41)	4.99 <sub>a</sub> (.52)	27

Note: Higher scores mean more positive attitudes toward Singaporeans. Means with different subscripts *in the same column* differ significantly at  $p < .048$ . SDs are in parentheses.



**FIGURE 3** Mean attitudes toward Singaporean students as a function of living arrangement and time among international students. Higher values mean more positive attitudes toward Singaporeans

## DISCUSSION

Early in the academic year, residents in the separated living arrangement tended to have less frequent intergroup contact compared to those in the integrated and the enclave living arrangements, whereas residents in the latter two groups did not differ. Over time, however, there was an increase in the frequency of intergroup contact among residents in the separated living condition, such that, at Time 2, residents in all living arrangements reported the same amount of intergroup contact. Thus, in the short run, there was a negative impact of the separated living arrangement compared to the other living arrangements on intergroup contact between Singaporean students and international students but this effect disappeared over time. This finding echoes theorizing on the short-term nature of the disadvantages of negative contact (MacInnis & Page-Gould, 2015). That is, people avoid intergroup contact at first because such contact is stressful but over time, gain positive experiences during intergroup contact, which might in turn encourage them to seek out such contact.

The separated living arrangement also had another negative consequence, which was the residents' satisfaction with university life. That is, the separated living arrangement led to lower university life satisfaction among residents overall, compared to the other two conditions. Furthermore, this effect emerged early, and was sustained over the academic year. Thus, this finding, which demonstrates the long-term nature of the negative influence of living arrangements on residents' satisfaction with university life, does not correspond with the short-term nature of the effects of living arrangement on frequency of contact or the quality of contact. Put differently, even when the residents who were separated from the outgroup reported similar levels of frequency of contact and quality of contact, compared to residents in the other living arrangements, they still expressed less satisfaction with their university life. We return to this finding later as we discuss the direct impact of living arrangements on well-being (and intergroup relations) independent of contact.

Although the enclave and integrated living arrangements did not differ from each other in their impact on the frequency of intergroup contact or university life satisfaction, the enclave living arrangement did fare worse than the integrated living arrangement when other outcomes were considered. While residents in all three living arrangements started out with similar perceptions of conflict, those in enclaves perceived greater conflict over time, even more than those in the integrated living condition. In comparison, residents in the separated living condition perceived the same amount of conflict over time. In addition, there was a tendency for international students in enclaves to have less positive attitudes toward Singaporeans over time but those who were next-door neighbors (i.e., had integrated living arrangements) with Singaporeans maintained their positivity over time. Although this finding was based on a relatively small sample, and will need to be replicated, it is notable that the pattern is similar to the negative impact of enclaves on perceptions of conflict among residents generally. To summarize, these findings regarding enclaves are more aligned with previous results where the broader university setting is multicultural (Sidanius et al., 2004) rather than homogeneous (Kirby et al., 2020), and also follows from the assumption that multiculturalism is a cornerstone of the national identity in Singapore (e.g., Ortiga, 2015).

Yet another notable aspect of these findings is that we did not find any evidence of tension in the consequences of the integrated living arrangement on well-being and intergroup relations. Instead, the integrated residents seemed to benefit from their living arrangement, albeit with a small increase in perceived conflict over time. That is, the integrated residents were generally more satisfied with their university life throughout the intervention (compared to the separated

residents), and perceived less intergroup conflict over time (compared to the enclave residents). As suggested earlier, one potential reason is that a multicultural setting or orientation can buffer against the potential stress and anxiety or perceptions of group victimization during intergroup interactions. This is consistent with earlier theorizing regarding the contact hypothesis, which proposes that reduced stress and anxiety during intergroup contact means positive consequences for intergroup attitudes (Pettigrew & Tropp, 2008). This is also consistent with emerging research that suggests the value of considering the broader cultural context for a more complete understanding of contact hypothesis (Kende et al., 2018). At the same time, beyond examining the importance of egalitarian values in the cultural context (Kende et al., 2018), the present research suggests multiculturalism as a potential factor for shedding more light on the moderators of intergroup contact (see also Ward, Szabo, & Stuart, 2016; See et al., 2020).

## Implications for interventions and policies

Taken together, the present findings suggest that policy makers who are interested in improving intergroup relations via influencing the social ecology of majority and minority residents should endeavor to provide opportunities for integration over separation or enclaves. The current findings suggest that even when the potential for intergroup conflict occurs between groups that are similar in their ethnic backgrounds but different in their country of origin, the integrated living arrangement can lead to more frequent intergroup contact, greater satisfaction with university life, less perceived conflict, and more positive intergroup attitudes. This is particularly significant in places such as Hong Kong or Singapore, where the overlapping ethnic background of local Chinese and Chinese immigrants from the People's Republic of China can be a significant axis of social conflict (Lee & Chou, 2018; Lee et al., 2016; Ortiga, 2015). For example, Lee et al. (2016) found that increased intergroup contact did not mitigate Hong Kong residents' negative attitudes toward granting Chinese immigrants access to social benefits or result in less exclusionary attitudes toward immigrants. However, such prior research often relied on self-reports of cross-group friendships and intergroup interactions. The present findings suggest the possible benefits of encouraging living arrangements that may create conditions for co-ethnic interactions that lessen perceived conflict. At least in the university context, encouraging diversity based on country of origin within residence halls is one practical way to alleviate such co-ethnic prejudice.

Relying on living arrangements as a way to facilitate well-being and intergroup attitudes might also apply to groups of different ethnicities too. Indeed, the Singapore government has already made efforts to encourage residential diversity when it comes to diversity in ethnic background in the general population. Since the institution of the Ethnic Integration Policy (EIP) in 1989, the Singapore government has relied on quotas restricting the resale of public Housing and Development Board (HDB) flats for different ethnic categories, specifically Chinese, Malay, and Indian/Others, within public housing blocks in order to promote more socializing and better relations between different ethnic groups (e.g., Sim, Yu, & Han, 2003). As of 2019, 77.9% of Singapore residents live in HDB estates (Department of Statistics Singapore, 2020), and thus such policies can have a wide impact on residential concentration and demographic make-up. The current research suggests that besides policies aimed at minimizing enclaves and separation for various ethnic groups, it may be useful to also have similar policies for immigrants' access to HDB flats.

At the same time, there is evidence suggesting that, in spite of these policies, ethnic congregation and the formation of enclave have not been fully arrested by the EIP, with clusters of HDB estates reaching quotas for Chinese, Malay, and Indian/Others occupants, respectively, in various

subzones of the city-state (Leong et al., 2020). The current research emphasizes the importance of persisting with, and even increasing efforts to avoid or reverse the development of enclaves even if it is difficult to do so, because enclaves lead to an increase in perceptions of conflict among all residents. One possible approach would be to find ways to encourage majority groups with greater economic mobility and choice about where to purchase an HDB flat to move to areas with higher concentrations of minority groups with lesser economic mobility; this could mean investing in schools, amenities, transit, and other infrastructure that make areas generally desirable to all residents in the area (Leong et al., 2020).

Based on the current findings, living arrangements seem to impact well-being and intergroup relations without correspondent influences on intergroup contact. This suggests that living arrangements have a direct impact on well-being and intergroup relations that is not linked to contact. To the extent that such direct impact is facilitated by a multicultural orientation, policy makers should then conduct campaigns and interventions to reinforce norms and competence for multiculturalism within residential settings. This also suggests that outside of living arrangements, the impact of contact can be undermined or enhanced due to social media interactions (e.g., Tian, 2019; White et al., 2020) or interactions in other settings such as the workplace or the classroom (see Boin et al., 2021). Thus, beyond diversity within one's neighborhood, policy makers should also be vigilant for intergroup hostility in online settings and discriminatory practices and behaviors in the workplace, as part of a multi-pronged approach.

More generally, by examining all three living arrangements simultaneously, the current research demonstrates that enclaves have positive consequences when compared to separation but negative consequences when compared to integration. While the formation of enclaves might be viewed by policy makers as the result of racial or ethnic segregation, it is possible for enclaves to form within otherwise integrated spaces. The present research's approach to studying living arrangements thus offers insight for designing living arrangements at a more granular level (e.g., via room assignments, floor assignments), and stresses the importance of creating living arrangement interventions within seemingly integrated spaces such as residence blocks, apartment buildings, and hostels. That is, current studies examining the impact of the EIP on residential concentration in Singapore (Leong et al., 2020) focus their study at the level of the housing block or estate, and it would be worth considering how enclaves may be forming within particular residential blocks or even floors of residential blocks in order to encourage still greater degrees of integration.

## Limitations and future directions

One limitation of the present research is that, while it presents a nuanced picture of the consequences of living arrangements on different outcomes including university life satisfaction and intergroup conflict and attitudes, the underlying mechanisms are unknown. Besides, a caveat to the current findings is that, as mentioned before, they were obtained in a context where multiculturalism is an integral component of national identity (e.g., Ortega, 2015), and government support for immigration is so strong that it is also supported by many individual citizens, especially those who are high in authoritarianism and prioritize conformity and tradition (Roets et al., 2015).

In future directions, because multiculturalism involves embracing diversity and learning from others (see Plaut, 2010; Sasaki & Vorauer, 2013), it would be useful to investigate whether the integrated living arrangement fares the best because it affords the most opportunities for learning from others. In addition, it will be important to see if the current findings generalize to other cultural



contexts that are similar to or different from Singapore in terms of their dominant intergroup ideology, and in terms of the histories involving majority and minority groups. For instance, it has been suggested that colorblindness is a prevalent and dominant ideology in the US and New Zealand (e.g., Knowles et al., 2009; Yogeeswaran et al., 2017). To test the generalizability of our findings, it would be interesting to examine whether the integrated living condition also fares best in these other cultural contexts, but perhaps for different reasons such as the role of colorblindness in promoting perceptions of others as unique individuals rather than members of a group (see Brewer & Miller, 1984; see also Gaertner et al., 1993).

Finally, future research could also examine the effects of living arrangements on other outcomes related to well-being and intergroup relations such as academic performance or support for pro-diversity policies in order to get a more complete picture of the various consequences of potential interventions that rely on structuring living arrangements.

## CONCLUSION

The present research suggests that interventions that involve structuring living arrangements are a fruitful approach to improve life satisfaction and intergroup relations, and highlights the need for both policy makers and researchers to investigate the role of living arrangements in improving the well-being of minority members such as migrants as well as their relations with majority members. We hope that continued research will further inform future policies and academic investigations for the improvement of intergroup relations and well-being.

## ORCID

Ya Hui Michelle See  <https://orcid.org/0000-0002-6772-982X>

Walter Patrick Wade  <https://orcid.org/0000-0001-8017-3582>

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## AUTHOR BIOGRAPHIES

**Ya Hui Michelle See** is an Associate Professor in the Department of Psychology at the National University of Singapore. She received her Ph.D. in Psychology from The Ohio State University. She is an elected fellow of the Society of Experimental Social Psychology. Her research examines the psychology of attitudes and persuasion in various domains including intergroup relations and immigration. Her work has appeared in journals such as *Journal of Personality and Social Psychology*, *Journal of Cross Cultural Psychology*, *Personality and Social Psychology Bulletin*, and *Journal of Experimental Social Psychology*.

**Walter Patrick Wade** is an Assistant Professor in the Department of Communication at Georgia State University. He received his Ph.D. in Communication Studies from Northwestern University. His research primarily examines communication and persuasion in the context of public debates about war. His work has appeared in *Rhetoric Society Quarterly*, *Media, War & Conflict*, and *Asian Journal for the Scholarship of Teaching and Learning*.

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