Abstract

Aims: Securing a clear sense of identity is a critical issue in adolescence, yet the role that cultural identity plays in the well-being of youths remains unclear. This study aims to examine the relationship between cultural identity and mental health among three groups of adolescents in Hong Kong with different residential backgrounds.

Methods: Data came from a cross-sectional survey with 2,180 4th-9th grade students in Hong Kong. Cultural identity was assessed by whether the youths identify themselves as local Hong Kong people, mainland Chinese, both HK and mainland Chinese, or confused about which group to belong to. Mental health was assessed by self-esteem, mental well-being, happiness, social anxiety and depression. Multiple linear regression was performed to examine the relationship between cultural identity and mental health, adjusting for sociodemographic variables.

Results: The regression results suggested adolescents with confused cultural identity scored lower in all positive indicators of mental health compared with those with a clear cultural identification. No significant association was found between cultural identity and social anxiety/depression.

Conclusion: Uncertainty in cultural identification may be detrimental for the mental health of adolescents living in a multicultural society. Interventions may consider cultivating clear cultural identities among adolescents to promote their mental health.

Keywords: Cultural identity; mental health; confused identity; cross-border adolescents; new immigrant adolescents

Does "Who I am" Influence "How I Feel"?

Cultural Identity and Mental Health among Hong Kong Chinese Adolescents

Introduction

The impact of cultural identity on the health and wellbeing of adolescents is a far-reaching yet underexplored issue. As Jensen, Arnett, and McKenzie (2011) pointed out, cultural identity confusion might develop into psychopathology and social problems, particularly when such confusions are caused by lack of volition, the prospect of losing power, and exposure to a distinctively different culture. Though empirical evidence is limited, scholars have speculated the linkage between cultural identity confusion and many undesirable psychosocial outcomes, such as diagnosis of dissociative identity disorder (Hermans & Dimaggio, 2007) and hostility towards others. Moreover, cultural identity confusion also creates barriers to recovery from mental illness. A recent mixed-methods study on refugees and asylum seeker suggests that cultural identity confusion might be a risk factor for coping with post-migration stress and recovering from mental health problems (Groen et al., 2019). At a macro level, when cultural identity confusion is coupled with frustration with local corrupt or unresponsive governments, it could lead to "problems of identity", manifested in group rage and violence in some regions (e.g., the Middle East, Africa, South Asia) (Lieber & Weisberg, 2002). Despite the previous research findings that demonstrate the association between cultural identity confusion and mental health, few studies have targeted particularly on adolescents in

this line of inquiry. This study zooms in on Chinese adolescents' cultural identity and mental health in the Hong Kong context in an effort to fill this knowledge gap.

Hong Kong is of particular interest in exploring this association in the face of globalization and hybrid culture systems where Eastern and Western cultural values intertwine. The unique geopolitical context of Hong Kong renders multiculturalism a reality of life for Hong Kong Chinese adolescents. Differentiated by their residential backgrounds, three groups of adolescents with partly similar and partly different cultural traditions and experiences can be identified. The majority group is local adolescents who are born and raised up in Hong Kong as well as receiving education in the city. But they reside within proximity with people from diverse cultural backgrounds thus being exposed to multiple cultural streams. The second group is new immigrant adolescents who were born in mainland China and migrated to Hong Kong, mainly for the reason of family reunion, but have lived in Hong Kong for less than seven years. The continued influx of new immigrants over the past decades has made immigrant adolescents a sizeable proportion of the entire youth population. The last group is a unique population, cross-border adolescents, who are born in Hong Kong thus holding permanent citizenship, live in the adjacent city of mainland China, but attend school in Hong Kong through daily commute. They move between two different sociocultural systems regularly and frequently, mostly on a daily basis (Chiu & Choi, 2019). These variations in the three groups of Chinese adolescents' cultural practice

lead to different senses of belonging to and identification with the Chinese and Hong Kong culture. However, it remains unclear whether the perception of cultural identities affects their mental health status. In recent years, the rapidly changing social atmosphere has cast a vast shadow on identity issues in the young generation. There is an urgent need to dive into this topic thus tailoring policies and interventions to protect and promote the mental health of Hong Kong adolescents.

It has been widely acknowledged that mental health encompasses both positive and negative aspects (Jeste & Palmer, 2013; Keyes, 2005). Increasing empirical evidence suggests that the absence of negative mental health symptoms may not necessarily correlate with high levels of positive mental health and vice versa, whereas it is possible that high levels of distress can coincide with high levels of subjective wellbeing (Sin & Lyubomirsky, 2009). Thus, a dual factor model of mental health is proposed that positive and negative aspects of mental health are psychometrically distinct and independent, which has also gained empirical support in middle school student samples (Greenspoon & Saklofske, 2001; Suldo & Shaffer, 2008).

Growing recognition on the crucial role of cultural identity in adolescent health could be found in two strands of studies. Developmental psychologists has considered cultural identity to be an important component in the formation of an adolescents' overall identity (Erikson, 1968; Kroger & Marcia, 2011). Failure of identity formation task and

identity confusion in adolescents may result in lower levels of self-esteem and compromised wellbeing (e.g., depression, self-injury) (Claes, Luyckx, & Bijttebier, 2014). While Eriksonian approach traditionally concentrates on developing an individual identity within one's cultural group, cultural identity formation is more about exploring and deciding the cultural groups to which one belongs. This brings another strand of studies from social identity approach to our attention, which provides another plausible rationale for the linkage between cultural identification and wellbeing. According to social identity theory (Tajfel & Turner, 1979) and self-categorization theory (Turner, Hogg, Oakes, Reicher, & Wetherell, 1987), identification with and internalization of particular groups are part of the inevitable process of understanding the personal sense of self (Turner & Onorato, 1999). During this process, group identification has the potential to affect perception of self and meaning of life, which further influences one's mental health in a nuanced way (Cruwys et al., 2013; Cruwys, Haslam, Dingle, Haslam, & Jetten, 2014; Haslam, Jetten, Cruwys, Dingle, & Haslam, 2018). With various research designs (observational, longitudinal, and experimental studies), Greenaway et al. (2015) offer evidence that group identification can protect and enhance health and well-being with strengthened control over the self in national, academic, community, and political groups. In general, scholars in this strand believe group identification can serve as a type of "social cure" to individuals' health and wellbeing (Haslam et al., 2018). On the other hand, identity distress or confusion, that

is, uncertainty that one may feel about her/his own identity, would lead to psychopathological symptoms (Berman, Montgomery, & Kurtines, 2004)

Although both strands of studies have addressed this issue from different perspectives, neither of them has explicitly focused on the potential linkage between cultural identity and mental health. In the present study, we extrapolate from prevailing studies on ethnic identity and individuals' mental health given the scarcity of empirical studies specifically looking at cultural identification. As Phinney and Ong (2007) argued, cultural identity and ethnic identity are not synonymous yet overlapping conceptually because of shared lived experiences at the individual level (Cross & Cross, 2008, p. 156). In recent years, studies on ethnic identity and wellbeing have proliferated with mixed findings reported - a buffering effect of ethnic identification on immigrants' health and wellbeing varies greatly across different ethnic groups (Bobowik, Martinovic, Basabe, Barsties, & Wachter, 2017). In a meta-analysis of 184 studies examining the relationship between ethnic identity and personal wellbeing, Smith and Silva (2011) found that ethnic identity was more strongly related to positive outcomes of mental health than to negative mental health symptoms. The average effect size of studies correlating ethnic identity with positive mental wellbeing are twice as large as those of studies correlating ethnic identity with mental health symptoms (e.g., depression, anxiety). Although the researchers have limited the target population to people of colour in North America, these findings remind us that variations may exist

in the linkages between cultural identities and different aspects of mental health. Another valuable inspiration comes from Berry's two-dimensional models of acculturation, which asserts preservation of one's original culture and adaptation to the receiving society are conceptually distinct and can vary independently (Berry, 1997; Berry & Annis, 1974; Phinney, Horenczyk, Liebkind, & Vedder, 2001). This brings in a proposal of four acculturation strategies with an underlying thought that ethnic identity and identity as a member of one's host society ("national" identity) are two independent dimensions of group identity. Specifically, an immigrant who identifies with both ethnic identity and the new culture in the host society has a bicultural identity (biculturalism). In contrast, one identifies with neither has a marginalized identity. Furthermore, one who only has an ethnic identity but does not identify with the new culture has a separated identity, whereas one identifies only with the new culture and gives up the original ethnic identity has an assimilated identity. Biculturalism strategy often includes integrating one's behaviors, values, and identities of each of the dual cultures (Benet-Martínez & Haritatos, 2005). Notably, bicultural individuals are not a monolithic group. Bicultural individuals' integration strategies may differ significantly in negotiating and combining their two cultures (Nguyen, & Benet-Martínez, 2013). For example, alternating biculturals may have a sense of belonging to dual cultures instrumentally, so they do not need to compromise their cultural identity. In contrast, blended/fused biculturals may see themselves as a product of both cultures and deeply identify with both cultures (LaFromboise, Coleman, & Gerton, 1993; Phinney &

Devich-Navarro, 1997). Regarding the process of bicultural identity integration, Benet-Martínez and Haritatos (2005) have identified two distinct influencing factors: cultural distance (perceived structural differences between two cultures) and cultural conflict (emotional tension of navigating one's position within and between each culture), which are context-dependent and personality-dependent.

However, existing studies of ethnic identity and acculturation predominantly focus on minority groups, whereas the concept of cultural identity pertains to not just minority, but all groups exposed to multiple cultural systems (Jensen, Arnett, & McKenzie, 2011). In a city branded for globalization and multiculturalism, one's cultural orientation should be recognized as an aspect of identity rather than as a taken-for-granted reality (Schwartz, Donnellan, Ravert, Luyckx, & Zamboanga, 2012). Thus, it is valuable to examine whether such cultural identifications affect mental health outcomes of adolescents, taking into account the different residential groups they belong to. In this study, we pay special attention to Chinese adolescents since they constitute the largest youth population in the Hong Kong society while bearing enormous uncertainty in identity formation amid the rapidly changing social environment. Specifically, the study aims to examine the relationship between cultural identity and the mental health of Hong Kong Chinese adolescents including both positive and negative indicators. According to the above two strands of theories and empirical evidence, people holding clear identification with certain cultural groups are likely to have better mental health

than those uncertain about their cultural identifications. Also, it is suggested in the literature that for individuals living in multicultural contexts, the multicultural attitudes are positively associated with psychosocial adjustment (Van Der Zee & Van Oudenhoven, 2000). A meta-analysis consisting of 83 studies and 23,197 participants based on random-effects approach provides robust evidence for the beneficial effect of biculturalism on psychological adjustment (Nguyen & Benet-Martínez, 2013). It yields two notable findings: 1) there exists a significant, strong, and positive association between biculturalism and psychological adjustment; 2) the association between biculturalism and adjustment is stronger than that between having just one cultural identity and adjustment (Nguyen & Benet-Martínez, 2013). Therefore, we have similar expectation that adolescents identified with both Hong Kong and Chinese cultures are more likely to have better mental health outcomes than other adolescents. Taken together, we hypothesize that adolescents with clear and specific cultural identities are more likely to have better mental health outcomes than those who do not identify with any cultural group. Moreover, adolescents with dual cultural identification may have better mental health outcomes than adolescents with a single cultural identification.

Methods

Data and sample

Data for the study came from a cross-sectional survey with 4th-9th grade students in Hong Kong. Participants were recruited through school-based multi-stage cluster sampling. First, three districts were selected from New Territories and Kowloon, where new immigrant and cross-border students were mainly concentrated. Within each district, two primary schools and two secondary schools were then randomly selected from a full list of registered schools obtained through the Education Bureau. Third, within each selected school, two average classes from each of the 4th-9th grade were randomly selected, and all students from the selected classes were invited to complete the survey. This sampling strategy generated a total of 2,180 adolescents in the study sample, including 1,387 local adolescents, 445 cross-border adolescents, and 348 new immigrant adolescents.

This study was approved by the Ethics Review Committee of the first author's institution, and informed consent was obtained from the students and their parents before the survey. The questionnaire was administered to participants in their classrooms with members of the research team being present to answer any question they might have about the survey.

Measures

C*ultural identity* was measured by a single-item question asking the respondents to select one from five categories that best describes which group they identified themselves with: 1) Hong Kong people; 2) mainland Chinese; 3) both Hong Kong people and mainland Chinese; 4) Unsure; 5) Other identifications. Participants' responses were recoded as 1=Local Hong Kong identity, 2= Chinese identity, 3= Dual identity, and 4= Confused identity, with those with other cultural identifications (e.g., ethnic minorities) being excluded from analysis since they were not the target population of this study.

Positive indicators of mental health include: 1) *self-esteem*, measured by the Chinese version of the classic 10-item Rosenberg Self-Esteem Inventory (RSEI) (Rosenberg, 1965). Respondents rated on statements like "I feel that I have a number of good qualities" on a 4-point Likert scale ranging from strongly disagree to strongly agree. The Cronbach's alpha for RSEI in this study was 0.725. The sum score of the scale was used in analysis with higher scores indicating higher degrees of self-esteem. 2) *Mental wellbeing,* measured by the Warwick-Edinburgh Mental Well-being Scale (WEMWBS)(Tennant et al., 2007), a 14-item scale consisting of both eudemonic and hedonic aspects of wellbeing. Each item was rated on a 5-point Likert scale with sample items like "I've been feeling good about myself". The Cronbach's alpha for WEMWBS in this study was 0.962. 3) *Self-rated health status,* assessed by a single-item question

asking participants to rate their health status on a 5-point scale (1= extremely unhealthy; 5= extremely healthy); and 4) *happiness,* measured by a single question also rated on a 5-point scale (1=not happy at all; 5=extremely happy).

Negative indicators of mental health include: 1) Social anxiety, measured by the 6-item social anxiety subscale of the Self-Consciousness Scale (Scheier & Carver, 1985). Respondents were asked to rate on a 5-point Likert scale (1=totally disagree, 5=totally agree) on items like "I get embarrassed very easily". The Cronbach's alpha for the social anxiety subscale in this study was 0.792. 2) Depression, measured by the 20-item Centre for Epidemiologic Studies Depression Scale (CES-D). Respondents were asked to rate how many days they had experienced the feelings as described in the past week:(0=never; 4= 6-7 days) (Roberts, Andrews, Lewinsohn, & Hops, 1990). Sample items include "I felt sad", "I felt lonely", etc. The Cronbach's alpha for CES-D in this study was 0.903.

A series of sociodemographic and contextual variables were also included in data analysis. *Residency status* represented the residential backgrounds of respondents: 1=local adolescents, 2=new immigrant adolescents, 3=cross-border adolescents. Previous findings reported that age, gender and socioeconomic status may affect the identity development and further impact on individual wellbeing in adolescence (Hughes, Hagelskamp, Way, & Foust, 2009; Myers, 2009). Furthermore, academic

pressure and performance might also affect adolescents' mental health. The above mentioned indicators were thus taken into account in the study too. *Relative economic status* was measured by perceived economic status as compared with classmates on a five-point scale (1=much worse; 5=much better). *Academic pressure* was measured by asking the respondents to rate on a 5-point scale how much pressure they felt about school (1=no pressure; 5=lots of pressure). *Academic performance* was measured by the results of final exams in the last semester.

Data Analysis

Multiple linear regression analyses were performed to examine the relationship between cultural identity and each of the positive and negative indicators of mental health outcomes. In all regression models, adolescents holding a local Hong Kong identification was used as the reference group for the variable *cultural identity* since they were the cultural majority in Hong Kong.

Results

Descriptive Statistics

The overall sample included a total of 2,180 adolescents with an average age of 12.39 years. Around 65% of respondents were local adolescents, while the proportions of new immigrant adolescents and cross-border adolescents in the sample were about 19% and

16% respectively. The majority of respondents were solely identified with the Hong Kong culture (58.76%), followed by adolescents holding dual identification with both Hong Kong and Chinese cultural (30.53%). In contrast, 4.17% of respondents only identified with Chinese culture, and the remaining 6.54% of respondents were uncertain about their cultural identity.

[Insert Table 1 about here]

Results of Multiple Linear Regression

Table 2 presents the results of regression of positive mental health outcomes on cultural identity and sociodemographic variables. As suggested by the results, in general, cultural identity had a positive association with mental health at large. The results of bivariate regressions and adjusted final models all indicated that, compared to those holding a local Hong Kong cultural identity, adolescents with a confused cultural identity consistently scored lower in self-esteem, mental wellbeing, self-rated health and perceived happiness. When all the sociodemographic and contextual factors were controlled, the adjusted models showed that respondents experiencing identity confusion scored 1.262 lower in self-esteem, 4.132 lower in mental wellbeing, 0.242 lower in self-rated health, and 0.255 lower in perceived happiness respectively than respondents holding a single HK cultural identity. However, adolescents with the Chinese cultural identity and dual cultural identity did not show significant differences in these mental health outcomes as compared to those identified with Hong Kong

culture. Overall, it was evident that lack of a clear cultural identity was detrimental for the mental health of adolescents in Hong Kong across all residential groups.

[Insert Table 2 about here]

Table 3 presents the results of regression of negative mental health outcomes on cultural identity and sociodemographic variables. As shown in the table, the bivariate analysis indicated that respondents identified with both cultures scored 0.575 higher than their counterparts who only identified with Hong Kong culture in social anxiety ($p<0.05$, $R^2= 0.004$, Model 9). However, such a link disappeared when demographic and contextual variables were controlled for model adjustment ($p>0.05$, $R^2=0.046$, Model 10). Regarding depression, there was no evidence suggesting a significant linkage between cultural identity and depression among adolescents (Model 11 to 12). Therefore, according to the results, cultural identity was not statistically associated with social anxiety and depression.

[Insert Table 3 about here]

Discussion

The present study extends the existing literature on group identity and individual wellbeing to a specific focus on cultural identity and mental health in adolescence. Specifically, it examines comprehensively the influence of cultural identity on both positive and negative mental health outcomes among Hong Kong Chinese adolescents

with different residential backgrounds. As the study results reveal, in comparison with adolescents identified with Hong Kong culture, adolescents without a specific cultural identification were more likely to have lower levels of self-esteem, mental wellbeing, perceived happiness, and self-rated health, regardless of their residential groups. However, such kind of association was not observed between cultural identity and the negative indicators of mental health – social anxiety and depression.

In line with previous studies on ethnic identity and individual wellbeing (Phinney, Cantu, & Kurtz, 1997; Smith & Silva, 2011), our findings support the positive association between cultural identity and positive wellbeing. Many scholars in the field have interpreted these positive associations as a buffering effect of positive ethnic identity against distress experienced by ethnic minority groups (Ponterotto & Park-Taylor, 2007). This might be helpful for explaining how immigrant and cross-border adolescents fare well in a relatively disadvantaged context comparing with local adolescents. Nevertheless, for the local majorities, we may seek interpretation from previous findings on the positive influence of multicultural attitudes on individuals exposed to multiple cultural streams (Van Der Zee & Van Oudenhoven, 2000). Our findings do not support the association between cultural identity and negative mental health outcomes. This echoes arguments in the literature that positive and negative aspects of mental health are distinct and independent of one another, and are not necessarily correlated (Suldo & Shaffer, 2008).

Our findings suggest that respondents with confused identities are more likely to present poorer mental health outcomes than their counterparts holding a clear Hong Kong identification. In a supplementary analysis with a binary variable of cultural identification (1=identifying with one or both cultures, 2= identifying with neither culture), similar results also distinguish the influence of confused identity from other three types of cultural identifications. Comparing with respondents with a specific cultural identification(s), adolescents identifying with neither culture score lower in all the mental health outcomes. Therefore, it is presumable that it may not be a matter of difference between Hong Kong identification and confused identification, but a difference between with or without a certain identification. The aforementioned two theoretical perspectives might provide some insights to understanding the identity uncertainty issue among Hong Kong Chinese adolescents. Such uncertainty could possibly originate from the fact that individuals being marginalized and rejected by both cultures even if they have a preferred cultural group. This is more likely to happen among new immigrant and cross-border adolescents considering the challenges of cultural encounter and adaptation they have to face in the host society. Although they can physically move between cultures, they are likely to psychologically stuck in a situation of discrepancy between preference and reality in acculturation and adaptation (Rudmin & Ahmadzadeh, 2001). Also, uncertainty of one's cultural identification might be a manifest of multiple indecisions and uncertainties amid the exploration and

development process in adolescence, termed as identity deficit of specific individuals (Baumeister, Shapiro, & Tice, 1985). This is more likely to happen among local adolescents, who are relatively free from acculturation pressure that emerged from migration, yet still under exploration and development of personal and social identities. Some adolescents exposed to various cultural values may vacillate between different opinions. They may suffer more inner ambiguity or dilemma when they perceive growing intergroup conflicts in their living environment. It may also happen to new immigrant and cross-border adolescents due to the fear of perceived discrimination in the environment. Individuals are likely to reduce identifications with a targeted minority group when perceiving higher levels of group discrimination in the host society. While weakening group identification dampens its positive effects on their health and wellbeing (Bobowik et al., 2017), it has been suggested that embracing one's cultural identity can help individuals to be more resilient in face of adversities like discrimination (Branscombe, Schmitt, & Harvey, 1999).

Against our original assumption, compared with individuals who only identify with Hong Kong culture, respondents holding dual cultural identifications are not statistically different in mental health outcomes. The reason might be because of the differences in cultural values and individual experiences. Previous studies demonstrate that cultural identity and cultural values are differentially related to adolescents' mental health (Sawrikar & Hunt, 2005). Also, we cannot exclude the confounding influences

of other individual characteristics that have not been included in the current model. Another tentative interpretation is that bicultural Hong Kong teenagers may have divergent perceptions of cultural distance and cultural conflict if we borrow Benet-Martínez and Haritatos' (2005) terms. Bicultural individuals may vary greatly in their cultural orientations and loyalties because of diversity in exposure to culture systems and personal cultural practice (Hong, Morris, Chiu, & Benet-Martinez, 2000; Nguyen & Benet-Martínez, 2007). Though all adolescents are Chinese, it is evident that cultural systems and practices that local, immigrant and cross-border adolescents are exposed to and immersed in are worlds apart. Although our measures do not capture the compatibility in cultural values among bicultural individuals, it is plausible that *cultural distance* and *cultural conflict* vary significantly among Hong Kong bicultural adolescents with the intensifying cultural and political climate. If adolescents identify with both Hong Kong and Chinese culture while failing to balance the competing cultural values, their adjustment and development may suffer. Such inner struggle may mitigate the positive impact of biculturalism on one's mental health to some extent.

Several limitations of the study should be noted. First, given the cross-sectional nature of the data, the causality between cultural identity and mental health cannot be established. There exists a possibility that adolescents with better mental health tend to hold a clear sense of cultural identification. Longitudinal design in future research is expected to resolve the puzzle. Second, measures of some key variables could be

improved. For example, cultural identity has multiple facets that can have potential influences on adolescents' wellbeing. A single item question may not be ideal to capture its full conceptualization. More comprehensive measures of cultural identity could be developed and used in future research. Third, there is room for more sophisticated theory construction and empirical examination. As pointed out by some scholars (Bobowik et al., 2017; Jetten et al., 2017), beyond cultural identity, other characteristics of cultural and ethnic groups may have played significant roles in the linkage between cultural identification and mental health. Inclusion of a broader set of such variables in future research will present a more complete picture of the complex relationships.

Despite the above limitations, as a pioneer study focusing on cultural identity and mental health among adolescents with different residential backgrounds in Hong Kong, our findings highlight the significant role that a clear cultural identity plays in adolescents' mental health in a multicultural society. Cultural identification is not only a cornerstone of one's identity formation but also a useful touchstone regarding individuals' mental wellness in adolescence. It should be noted that personal and social identities are woven together and shaped by the economic, social and political context where individuals reside. During the processing of the current study, the COVID-19 pandemic has been sweeping the world, which brings up new questions for identity crisis across the immigrant communities worldwide. In many countries and regions, an unprecedented level of border closure and lockdowns have been implemented amid this

pandemic without specific dates to expire. Furthermore, with school closure, medical care systems on edge, and fading job opportunities across many countries and regions, the pandemic results in inevitable side-effects of unfavourable conditions for immigrants and intergroup anxiety worldwide. All these lead to unprecedentedly soaring uncertainty of choosing which cultural group to belong to among adolescents experiencing cultural confrontations in their daily living. Such an identity crisis might not be a distant threat to their mental health, but rather a pressing issue and challenge to be noticed and tackled in the global community.

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Table1 Descriptive Statistics

	Percentage (%)	Mean (standard deviation)
Sociodemographic characteristics		
Age		12.39 (2.10)
Gender		
male	43.31	
female	56.69	
Residential status		
local adolescents	64.46	
new immigrant adolescents	19.43	
cross-border adolescents	16.11	
Relative economic status		2.99 (0.92)
Academic pressure		3.05 (1.14)
Academic performance		2.98 (1.19)
Cultural identity		
Hong Kong identification	58.76	
Chinese identification	4.17	
dual identification	30.53	
confused identification	6.54	
Mental Health		
Social anxiety		17.78 (4.91)
Depression		30.24 (14.98)
Self-esteem		28.35 (5.28)
Self-rated health		3.77 (1.00)
Perceived happiness		3.61 (1.04)
Mental wellbeing		45.41 (12.27)

Table 2 Regression of Positive Mental Health Outcomes on Cultural Identity and Sociodemographic Variables

	Self-esteem		Mental wellbeing		Health status		Perceived happiness	
VARIABLES	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8
Cultural identity (Ref: Hong Kong identification)								
Chinese identification	0.512	0.304	-0.584	-1.134	0.0626	0.0615	-0.145	-0.0585
	(0.755)	(0.458)	(-0.372)	(-0.732)	(0.489)	(0.464)	(-1.084)	(-0.447)
dual identification	0.142	-0.0962	0.326	-0.263	-0.0649	-0.0772	-0.0662	-0.0446
	(0.472)	(-0.306)	(0.470)	(-0.359)	(-1.145)	(-1.230)	(-1.099)	(-0.707)
confused identification	-1.188*	-1.262*	-3.933***	-4.132***	-0.240*	-0.242*	-0.279*	-0.255*
	(-2.154)	(-2.441)	(-3.081)	(-3.425)	(-2.305)	(-2.343)	(-2.531)	(-2.473)
Gender (Ref: male)								
female		-0.824***		-1.809**		-0.131**		-0.133**
		(-3.277)		(-3.082)		(-2.610)		(-2.645)
Age		-0.242***		-0.659***		-0.0509***		-0.0675***
		(-3.549)		(-4.135)		(-3.731)		(-4.929)
Residential status (Ref: local adolescents)								
cross-border adolescents		0.166		0.855		0.108		0.0931
		(0.472)		(1.041)		(1.531)		(1.317)
new immigrant adolescents		0.601		1.967*		0.105		-0.0400

		(1.423)		(1.996)		(1.246)		(-0.473)
Relative economic status		0.683***		1.868***		0.131***		0.150***
		(4.952)		(5.797)		(4.736)		(5.416)
Academic pressure		-0.941***		-2.131***		-0.118***		-0.256***
		(-8.607)		(-8.351)		(-5.407)		(-11.64)
Academic performance		-1.133***		-2.128***		-0.0495*		-0.112***
		(-10.15)		(-8.169)		(-2.220)		(-4.969)
Constant	28.36***	35.88***	45.60***	61.54***	3.799***	4.570***	3.652***	5.187***
	(162.0)	(34.13)	(112.5)	(25.08)	(114.9)	(21.76)	(104.7)	(24.61)
R-squared	0.004	0.167	0.007	0.155	0.004	0.067	0.005	0.168
Adjusted R2	0.002	0.161	0.005	0.150	0.002	0.061	0.003	0.163

Note: t-statistics in parentheses; *** p<0.001, ** p<0.01, * p<0.05.

Table 3 Regression of Negative Mental Health Outcomes on Cultural Identity and Sociodemographic Variables

	Social anxiety		Depression	
VARIABLES	Model 9	Model 10	Model 11	Model 12
Cultural identity (Ref: Hong Kong identification)				
Chinese identification	1.153	0.666	0.885	0.815
	(1.831)	(1.010)	(0.462)	(0.429)
dual identification	0.575*	0.261	-1.164	-1.013
	(2.065)	(0.835)	(-1.374)	(-1.124)
confused identification	0.176	-0.0424	1.228	0.957
	(0.344)	(-0.0825)	(0.789)	(0.646)
Gender (Ref: male)				
female		0.804***		1.841*
		(3.218)		(2.555)
Age		0.154*		0.554**
		(2.267)		(2.833)
Residential status (Ref: local adolescents)				
cross-border adolescents		0.0438		-0.390
		(0.126)		(-0.387)
new immigrant adolescents		0.660		-0.0583
		(1.574)		(-0.0482)
Relative economic status		-0.369**		-0.761
		(-2.689)		(-1.923)
Academic pressure		0.552***		3.852***
		(5.084)		(12.29)
Academic performance		0.242*		1.935***
		(2.179)		(6.049)
Constant	17.54***	14.00***	30.44***	7.598*
	(107.9)	(13.41)	(61.56)	(2.521)
R-squared	0.004	0.046	0.002	0.140
Adjusted R2	0.002	0.040	0.000	0.134

Note: t-statistics in parentheses; *** p<0.001, ** p<0.01, * p<0.05.