RESEARCH ARTICLE

Roles of Illness Attributions and Cultural Views of Cancer in Determining Participation in Cancer-Smart Lifestyle among Chinese and Western Youth in Australia

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Abstract

Background: The study investigated the influence of culturally-based health beliefs on engagement in healthy lifestyle behaviour. Specifically, the study compared levels of engagement between Western and Chinese youth in Australia and assessed the extent to which culture-specific attributions about the causes of illness, and health beliefs, predict engagement in healthy lifestyle behaviour. **Materials and Methods**: Ninety-four Western and 95 Chinese (N=189; Mean Age=20.8 years, SD=3 years) young adults completed an online questionnaire. Predictor variables were cultural health beliefs measured by the Chinese Cultural Views on Health and Illness scale (CCVH, Liang et al., 2008), and illness attributions beliefs measured by the Cause of Illness Questionnaire (CIQ, Armstrong and Swartzman, 1999). Outcomes variables were levels of engagement in healthy lifestyle behaviour. **Results**: Results indicated that Chinese participants have a significantly lower exercising rate and healthy dietary habits compared to the Western sample. Moreover, Chinese participants were found to believe more strongly than Westerners that cancer was associated with factors measured by the Traditional-Chinese-Model (TCM). Finally, the observed relationship between cultural health beliefs and physical inactivity was mediated by attributions of illness, in particular to the supernatural subscale, with the Sobel Test showing a significant mediation (z=-2.63, p=0.004). **Conclusions**: Mainstream approaches to encourage healthy lifestyles are unlikely to be effective when educating Chinese youth. Instead, health promotion programs should attempt to address the illness attribution beliefs and educate Chinese youth about the role of diet and exercise in prevention of diseases such as cancer.

Keywords: Cultural views - illness attribution - Australian youth - Chinese - Western

Introduction

Although cancer is one of the leading causes of premature death worldwide, there is a growing consensus that some cancers are preventable through improved diet, physical activity, decreased sedentary behaviour, and participation in screening, where appropriate. For instance, it is estimated that up to 70% of mortality from colorectal cancer could be eliminated by reducing consumption of red meat and improving intake of fruits and vegetables (NHMRC, 2003). Similarly, the World Health Organisation data suggest that physical inactivity is linked to 25% of all-cancer diagnoses (NHMRC, 2003; WHO, 2007). In light of these statistics, it is not surprising that significant effort throughout the world has focused on the promotion of healthy lifestyle (e.g. Irigaray et al., 2007; Anand, 2008; Riemer, 2009).

In order to foster improved lifestyle choices, it is important that beliefs about, and attitudes to the role of behaviour in cancer and other chronic disease causation be addressed (Armstrong and Swartzman, 1999; Australian Institute of Health and Welfare, AIHW, 2002; Kwok

and Sullivan, 2006b). The difficulty with this goal is that public health interventions and health promotion activities targeted at disease prevention tended to favor a single approach without specific consideration for cultural differences existing in the population. Generally, the approach focuses on educating people about the importance of behaviour change and addressing the main barriers to behaviour change among the dominant Anglo-Celtic population (National Health and Medical Research Council, NHMRC, 2003; Riemer, 2009). The effectiveness of such an approach in influencing the behaviour of minority ethnic groups remains uncertain with some arguing that they have the unanticipated consequence of increasing rather than mitigating health disparities (Tang and Easthope, 2000; Wang et al., 2007; Liang et al., 2008).

The seriousness of the need to provide culturally sensitive health promotion activity is further highlighted by consideration of migration patterns. In Australia, immigrants from the Republic of China (including Hong Kong SAR: stands for Special Administrative Regions and identifies political subdivisions of the People's and Macau SAR) are the largest non-English speaking immigrant

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group in the country (Kwok and Sullivan, 2006b). It is alarming to note that the health status of these immigrants tends to decline with time residing in Australia (AIHW, 2002; McCracken et al., 2007). Moreover, data also suggest that Australian women of Chinese ancestry are at a 40% elevated risk of developing cancer compared to age-matched contemporaries remaining in China (Ziegler et al., 1993; Kwok et al., 2009). The explanation for this disparity is unknown. Nevertheless, data indicate a general lack of participation in physical activity and poorer dietary practices, which may reflect fundamental, culturally-influenced barriers to chronic disease prevention among Chinese youth (Lee, and Loke, 2005; ABS, 2007; Wang et al., 2009).

Although the role of cultural beliefs in predicting uptake of cancer preventing lifestyle choices remains to be adequately explored, research has documented important differences between different cultural groups on perceptions of health and illness (Chen, 1996; Kwok and Sullivan, 2006b). Among those of Chinese ancestry, there is widespread endorsement of Traditional Chinese Medicine (TCM). Many of the assumptions underpinning TCM differ significantly from Western biomedical models of health and illness (Armstrong and Swartzman, 1999; Liang et al., 2008). For example, according to TCM, health and illness need to be viewed in a holistic manner. Health is an outcome of the functioning of the entire matter of the entire human being, (i.e. psychological, moral, and social functioning) rather the functioning of a specific physiological, neurological, anatomical or other bodily systems.

Another difference lies within the context in which health and illness are considered. In TCM, health is fundamentally linked to the notion of being 'in balance' with the physical environment through harmonious social relationships and satisfaction with life (Chen, 1996; Simpson, 2003; Tan, 2008). A "balanced" food intake is not defined in terms of micro or macro nutrients, or the balance between energy-in and energy-out, but in terms of the equilibrium of the Yin and Yang forces (also known as *hot-cold balance*; Tan, 2008). These are ideas that are not included in biomedical understandings of health and illness.

Finally, and perhaps the most striking differences between the two illness models, is that many Chinese are committed to the belief that the supernatural, distortions in social relationships, and immoral wrongdoings all play a role in illness causation (Chen, 1996; Kwok et al., 2009).

These fundamental differences in models of illness highlight the importance of attending to cultural influences when attempting to change behaviours linked to disease prevention. Kwok and Sullivan (2006b) also pointed out the importance for addressing and integrating culturally specific health beliefs in health promotion interventions that are oriented towards the Chinese migrants. Another consistent outcome has been reported; Wang et al. (2007) found that after viewing a culturally-tailored video, including physician-recommendations, Chinese women's screening intentions significantly increased and they were less likely to subscribe to an Eastern view of health. This result suggests that combining knowledge of both illness belief systems can improve outcomes.

A large body of literature has furthered this view and suggested that health beliefs, particularly causal explanations for illness, play a crucial role in determining the behavior one chooses to engage in (Chen, 1996; Tang and Easthope, 2000; Kwok and Sullivan, 2006a; 2006b). Armstrong and Swartzman (1999) assessed the influence of ethnic membership on causal explanations for illness among Asian immigrants and their Western counterparts. Results suggested that the two groups (i.e. Asian and Western) differed only for those causal categories that represent the distinction between Asian and Western medical model. For example, consistent with suggestions from TCM that illness arises from imbalance, social relationships, and supernatural factors such as fate or bad luck (Chen, 1996), Asian participants were found to more strongly endorse these causal explanations; and were less likely to believe that bacteria and viruses were the causes of illness compared with the Western participants. Individuals who favoured TCM were also likely to report lower satisfaction with the Western Health Care Services. These results suggest that Chinese immigrants, who are characterised by a commitment to TCM, will likely display a lack of acceptance of, and adherence to, Western medical recommendations, including the adoption of behaviours targeted by health promotion programs.

The present study has a primary focus on establishing potential cultural barriers to participation in health promoting behaviours among young people. Late adolescence and early adult years, known collectively as "emerging adulthood", are an important window of opportunity for the establishment of lifestyle habits that can ultimately impact on chronic disease risk (Lee and Loke, 2005; Wang et al., 2009). The difficulty of establishing healthy lifestyle at this age is exacerbated by the fact that young people's health is generally good; thus, the actual perceived risk in this group is low. Nevertheless, early detection and modification of unhealthy behavioural practices in this cohort is essential in order to impact upon future incidence of chronic diseases (WHO, 2007).

The aim of the current study is to compare the illness model among Chinese and Western youth in Australia and to examine the relationship between illness attribution beliefs, and participation in cancer-preventive behaviours. Consistent with past research, it is hypothesized that Anglo-Australian participants will more strongly endorse causal factors for ill health that are associated with the biomedical model (e.g., Infection and Physical Constitution) than will the Chinese. The latter group will indicate higher endorsement of the supernatural, social relationships, and balance as causes of illness. Moreover, it is also hypothesized that differences in practice of cancer-preventive behaviours will be mediated by individual's beliefs about the causes of illness, which is culturally influenced.

Materials and Methods

Participants

Data were collected from a total of 189 participants (64 males, and 125 females), with a mean age of 20.8 years

(SD=3 years). The overall sample consisted of 94 (49.7%; 23 males and 71 females) who were of a Western cultural background and 95 (50.3%; 41 males, and 54 females) who were of a Chinese cultural background (53.7% from Mainland China; 28.4% from Taiwan; 5.2% from Macau, and 12.6% from Hong Kong).

Participants were categorized into the "*Western background group*", if they identified themselves as being Westerners; were born in Australia; and had both parents born in Western countries. Similarly, assignment to the "*Chinese background group*" required participants to fulfil at least two out of the three requirements including self-identified as being of "Asian background"; born in an Asian country (China, Hong Kong, Macau or Taiwan); and spoke Chinese mostly.

The majority of participants were first year Psychology students from The University of Adelaide who received course credit for participation. Additional Chinese-born participants were recruited from a local language centre; (South Australia Adelaide Language Centre, SAALC).

Procedures

The study gained approval from the School of Psychology Human Research Ethics Subcommittee at the University of Adelaide.

The questionnaire was made available online for participants to complete at their convenience. First year psychology students who participated for course credit gained access to the questionnaire via the School's "Research Central" website. For students at the SAALC, links to the online questionnaires were provided, and alternatively, hardcopies of the questionnaire were also made available for students. An incentive to enter the draw to win a $100 gift voucher was provided for non-first-year psychology students who did not participate for course credit.

Measures

Data collected included demographic variables; participants' age, gender, and family history of a chronic disease (e.g., cancer). Acculturation was measured using four questions derived from Rissel's Acculturation Scale (TRAS, Rissel, 1997); including length of residency in Australia (in years), ethnic identity, importance of Australian traditions, and language mostly spoken. These questions were re-worded in order to accommodate both groups since the original scale was used in the context of a Chinese population. Additionally, the questionnaire also measured the following predictor variables: **cultural views of health and illness, illness attribution**; and outcome variable: **compliance with cancer prevention guidelines for diet and physical activities**.

Measuring cultural views of health: the chinese cultural views of health and cancer (CCVH)

The CCVH scale was developed by Liang et al. (2008) as a mean to measure Chinese cultural views of health and cancer. The measure consists of 25-items, and responses to each item are assessed on a 5-point Likert scale, ranging from: (1) *strongly agree, agree, neutral, disagree*, to (5) *strongly disagree*. Higher score denotes a more traditional Eastern cultural view of health care. The scale contains seven cultural subscales, namely, fatalism, hot-cold balance, use of herbs, self-care, negative attitudes towards medical examination, negative attitudes towards Western medicine and lifestyle with reliabilities ranging between 0.39 and 0.82. The low to moderate reliability of some subscales may be as a result of small number of items included, and the author has recommended adding additional items to improve the reliability of these specific cultural scales. Hence, based on the literature reviews (e.g., Tang and Easthope, 2000), one item which frequently emerged was added in the measure to improve the reliability of the Western Medicine subscale (The added item was: Western medicine seems to only suppress the symptoms of disease rather than removing the underlying source of illness); this scale had the lowest reliability of .39. Wording of the items in the Western Medicine and Use of Herbs subscales was modified, where Chinese medicines were changed to "herbal medicines". This was done to eliminate in-group/out-group bias.

Measuring Illness Attributions: the Cause of Illness Questionnaire (CIQ, Armstrong and Swartzman, 1999)

The CIQ scale was originally developed by Landrine and Klonoff (1994, as cited in Armstrong and Swartzman, 1999) when studying cross-cultural illness beliefs. The current study utilized the revised version by Armstrong and Swartzman (1999) which consists of a 43-item scale measuring an individual's causal explanation for illness; with seven subscales describing different illness attributions that are as follows; infection, physical constitution, lack of energy, emotions, balance, supernatural, and relationships with others. Ratings were given on a 1 (*not at all important*) to 7 (*extremely important*) point Likert scale for the importance of each as a cause of illness. The internal reliability of six of the seven subscales reported by Armstrong and Swartzman's (1999) ranged between 0.63 (*physical constitution*) and 0.90 (*emotions*). Reliability of the "infection" subscale was not reported because it consisted of 1 item.

Survey of cancer prevention guideline for diet and physical activity (CPG)

The CPG survey contains 13-items describing cancer-preventive behaviours. Items relevant to dietary habits and physical activity level were sourced from the cancer-smart lifestyle fact sheet (Cancer Council Australia, CCA, 2010), the national dietary guideline (NHMRC, 2003), and the national physical activity guidelines for adults (Australian Government Department of Health and Aging, ADGHA, 2005). Respondents indicated how often they complied with the behaviours described on a 1 to 5 point scale ranging from (1) for never (i.e. 0-10%), through rare (i.e. 11-30%), *sometimes* (i.e. 31-50%) and often (i.e. 51-80%), to (5) for *always* indicating 81-100% of the time the indicated behaviour is performed. Higher scores represent more frequent engagement in the behaviour.

Results

Assumptions of parametric testing were checked

for each analysis. Six participants were excluded from further data analyses, as they did not fit the age criterion (18-28 years), or failed to respond validly (i.e. giving the same response for all questions). Non-normal data were subsequently analysed using the non-parametric alternative; and where variance was not judged homogenous, the appropriate comparison was made.

Group differences in the frequency of engagement in healthy diet and physical activities

Independent t-tests were used to assess for differences between the Chinese and Western sample with respect to engagement in healthy lifestyle behaviours. As shown in Table 1, the differences represented a small to medium sized effect on average and indicated that the Western sample scored higher on both subscales. Chinese participants showed lower compliance with dietary and physical activity recommendations as compared to the western group.

Group differences in causal explanation for illness

Examination of frequency distribution of the data indicated that the subscales "infection", "physical constitution", "emotion", and "lack of energy" were negatively skewed; more clustered towards the higher end of the scale, although the two cultural groups did not score significantly differently on these measures (see Table 2). Such a result suggests that, contrary to the prediction, the two groups did not significantly differ in the belief that the biomedical attributions "infection", "physical constitution", and "lack of energy" had an important role in ill-health.

Nonetheless, means on the subscales "Emotion", "Balance", "Supernatural", and "Relationship with Others" differed significantly between the two groups, with the Chinese participants indicating stronger attribution of illness to these factors than the Western participants, supporting the hypothesis that Chinese participants will more strongly endorse causal beliefs that are consistent with the TCM.

Table 1. Asian Versus Western Participants' Self Reported Behavioural Compliance with the CPG

	Mean (SD)		t(187)	p	Effect size
	Chinese	Western			
Healthy Diet	3.12 (0.76)	3.50 (0.69)	-3.61	<0.001	0.26
Exercise	2.53 (0.85)	3.21 (0.83)	-5.58	<0.001	0.38

*Range=1 (Never) to 5(Always)

Table 2. Asian Versus Western Participants' Self Reported Beliefs in Cause of Illness

Subscales	Mean (SD)		t(187)	p	Effect size
	Chinese	Western			
Infection	6.07 (1.06)	6.32 (0.92)	-1.7	0.091	0.12
Physical Constitution	5.48 (1.11)	5.57 (0.97)	-0.59	0.554	0.04
Lack of Energy	5.68 (0.83)	5.78 (0.80)	-0.84	0.401	0.06
Emotions	5.35 (1.11)	4.88 (1.09)	2.95	0.004	0.21
Balance	4.17 (1.24)	2.45 (1.23)	9.55	<0.001	0.57
Supernatural	3.14 (1.16)	1.94 (0.87)	8.12	<0.001	0.51
Relationships	3.87 (1.33)	3.12 (1.24)	4.03	<0.001	0.28

*Range=1 (Not at all important) to 7 (Extremely important)

Mediational analyses – mediating effect of Cause of Illness beliefs

The aim of the mediational analysis was to examine the prediction that cultural health beliefs (*predictor variable*) exerted its impact on behavioural compliance with the cancer-preventing behaviours (*outcome variable*) through the beliefs about the causes of illness (*mediating variable*). In order to establish the mediating effect (see Figure 1), Baron and Kenny (2009) have suggested four conditions that must be met. To ensure a pure measure of the relationship between the three variables (i.e. IV, DV, and the Mediator), each step controls the effects of age, gender, and family history of cancer which have been found as having substantial effect on the variables in the current analysis.

Step 1: *The predictor variable is correlated with the outcome variable (path c)*. Only the "Physical Activity" subscales met this criterion (see Table 3). Establishment of this relationship is necessary as it indicates that there is an effect that may potentially be mediated. Hence, "Healthy Diet" subscale was not included in the subsequent analyses.

Step 2: *The predictor variable is correlated with the mediator (path a)*. This condition holds for the emotions (r=0.389, p=0.000), balance (r=0.592, p=0.000), relationship with others (r=0.332, p=0.000), and supernatural (r=0.472, p=0.000) subscales as shown in Table 4 (step II).

Step 3: *The mediator affects the outcome variable (path b)*. As shown in Table 4 (step III), the supernatural subscales remained as the only variable that is a significant
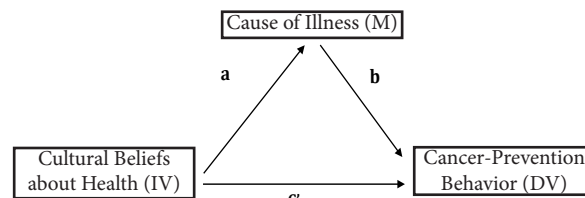

Figure 1. The Proposed Meditational Model

Table 3. Correlations between Cultural Beliefs (IV) and Cancer-prevention Behaviour (DV)

(DV)	Cultural Beliefs (IV)
	$r_{IV.DV}$
Healthy Diet	-0.021
Exercise	**-0.201****

*p<0.05, **p<0.01, ***p<0.001. Bold text denotes that the criteria for mediation are met

Table 4. Effects of Cultural Health Beliefs on Exercising Behaviour as Mediated by Illness Attribution

	Step II	Step III	Step IV
	$r_{IV.M}$	$r_{M.DV}$	β_{IV}
Infection	-0.073	0.034	-
Physical Constitution	0.095	0.07	-
Lack of Energy	0.092	0.227**	-
Emotions	0.389***	0.094	-
Balance	**0.592***	-0.126	-
Supernatural	**0.472***	**-0.202**	**-0.1**
Relationships	0.332***	-0.02	-

*p<0.05, **p<0.01, ***p<0.001. Bold text denotes that the criteria for mediation are met

Table 5. Results of Multiple Regression Analysis

Step	Path	β	Adjusted R^2	R^2 Change	F Change	95% CI for β
1	c	-0.202**	0.094	0.037	7.72**	-0.135 to -0.023
2	b	-0.220**	0.126	0.036	7.78**	-0.163 to -0.028
3	a	0.484***	0.237	0.214	52.84***	0.318 to 0.554
4	c'	-0.095	0.126	0.006	1.39	-0.100 to 0.025

*p<0.05, **p<0.01, ***p<0.001. The R^2 change in step 2=the additional variance the mediator explains after controlling for the covariates and the IV

correlate of both the predictor variable (i.e. cultural beliefs) and the outcome variable (i.e. Physical Activity). This condition also holds for when the effect of Cultural Beliefs (IV) was controlled.

Step 4: *The correlation between the predictor and the outcome diminishes when the mediator is partialled out (path c')*. The final column of Table 4 indicates the Beta value of the predictor variable after the mediator and the covariates (i.e. age, gender, and family history of cancer) are controlled.

The results indicate that the four conditions required to test mediation were met for the "Supernatural" cause of illness subscales. As indicated in Table 5, the standardized β was equal to -0.202 (p=0.006) in the simple regression model (path c). However, the beta value reduced to -0.095 (p=0.241) and became non-significant once the mediator (supernatural beliefs) has been partialled out (path c'). This suggests that the impact of cultural beliefs on exercising behaviours is wholly mediated by the attribution of illness to Supernatural causes, with the Sobel Test showing significant mediation (Sobel Test Statistic = -2.63 (Sobel, 2010)). Test showing a significant mediation (p=0.004).

Discussion

This study examined how cancer-preventing behaviours and beliefs about health and illness vary between Chinese and Anglo Australian students. It also explored the mediating influence of illness attribution on the relationship between cultural health beliefs and cancer prevention behaviours.

The results from the present study indicated four principal findings: (1) Chinese youth residing in Australia participate less in diet and lifestyle choices that mitigate cancer risk than their Western counterparts; (2) Health-related attributions are significantly different between the two broad ethnic groups; both groups attribute biomedical influences as important but the Chinese also endorse attributions consistent with TCM; (3) A number of culturally-influenced health beliefs are significantly negatively correlated with participation in health related behaviours; and (4) The relationship between cultural health beliefs and non-participation in cancer preventing exercise is mediated through the belief that illness can be attributed to "the supernatural". The implication of these findings is that health promotion programs and clinical service delivery should address the disparate health beliefs of Chinese immigrants in order to better foster healthy lifestyle for this segment of the population.

The finding that Chinese participants had significantly less frequent participation in physical activity compared

to the Western group is consistent with previous research demonstrating a general lack of exercising among some Asian communities (ABS, 2007; Wang et al., 2009). Wang et al. (2009) have identified factors such as lack of exercise facilities, heavy schoolwork demand, and the popularization of computers and the Internet as reducing young people's interest in participating in physical activities.

Our results suggest that illness attributions may also be implicated. Chinese participants held stronger beliefs about the influence of Emotions (e.g., anxiety, stress), the Supernatural (e.g., bad luck, pay back for wrong doings), Balance (e.g., imbalance of Yin/Yang), and the Relationship with Others (e.g., Trouble in relationships) as the causes for illness. These beliefs are consistent with TCM and indicate the importance of acknowledging traditional Chinese medicine when delivering health services to this group (Armstrong and Swartzman, 1999; Kwok and Sullivan, 2006a; 2006b).

Nevertheless, it is also important to acknowledge that both cultural groups were not significantly different on acknowledging the contribution of biomedical factors, particularly, "Infection", "lack of energy" and "Physical Constitution" to illness causation. This finding illustrates a blending between the western and the traditional understanding of cancer in the Chinese group and confirm previous results using the same measure and a comparable sample group (i.e. university students, Armstrong and Swartzman, 1999). Moreover, it is interesting to note that Chinese participants rated biomedical attributions as more important to illness causation than attributions consistent with TCM (refer to Table 2). The increasing education and exposure to the dominant Western models for understanding health and illness may explain the growing acceptance and popularity of the biomedical disease model among the Chinese population, especially those who are younger and are living in Australia.

The finding that illness attribution beliefs have a significant influence on performance of health-related behaviour is consistent with results from Chen (1996), Liang et al. (2008) and Kwok et al. (2009). The implications of this are important; cancer risk for this group is likely to be heightened over the lifespan because of decision making about physical activity that correlate with TCM illness attributions. The significant negative relationship between Supernatural attribution and exercising behaviour is consistent with the suggestion that since the direct causes for cancer are often viewed as unknown or mysterious, Chinese people tend to see cancer as their destiny rather than as something they can prevent through lifestyle choices (Kwok and Sullivan, 2006b). Similarly, the significant association between balance and physical inactivity among Chinese is consistent with Tang and Easthope (2000), Simpson (2003) and Chen (1996)'s observations that appropriate use of food is perceived as the more effective cure for illness, and the best way for illness prevention.

It is important to note that the meditational analyses suggested that the extent to which participants engaged in exercising behaviours was not influenced by how strongly they agreed with the biomedical explanations of illness,

but instead was influenced by how strongly participants held beliefs that were *different* to the biomedical model. The fact that supernatural and balance beliefs are non-biomedical in nature, but mediated the relationship between cultural health beliefs and exercising behaviour, provides an important indication of the importance of addressing non-biomedical beliefs when attempting to encourage physical activity.

Several limitations of the study must be considered when interpreting the results. Firstly, the sample population mainly consisted of tertiary students, many of whom were completing a health-related topic (psychology). It is therefore possible that this sample more strongly attributed health to biomedical factors than other Chinese and Western people in the general population. Similarly, the sample may also have higher levels of engagement with healthy lifestyles than the population due to better knowledge about cancer risk factors. Consequently, it is important that future research replicate this result in the general population.

In conclusion, given the strong evidence of the links between unhealthy lifestyle behaviours and cancer, it was concerning that the present study revealed a generally lower behavioural compliance with the cancer preventing behaviours among the Chinese-Australian sample as compared to the Western young adults. In addition, the results in this study also provide insight into the variations in views on health and illness (i.e. beliefs about the causes of illness) between cultural groups (i.e. Chinese and Western youth); and its influence on health-related behavioural practice (especially physical inactivity). These findings have important implications as they identify the potential cultural barriers that may impact upon the uptake of health promoting messages and interventions. It is likely that mainstream health intervention programs will need to be specifically targeted towards Chinese youth. For example, efforts to promote healthy lifestyle will need to be aware of, and address barriers linked with, Chinese traditional beliefs regarding the causes of cancer. Culturally tailored approaches may be more effective in improving protective behaviour (e.g. exercise).

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