‘This is the peer reviewed version of the following article:

which has been published in final form at https://doi.org/10.1002/pits.22122

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Predictors of mainland Chinese students’ wellbeing

Abstract

There has been substantial research in the USA, Europe and Australia about factors influencing students’ wellbeing. However, such research has been relatively rare in mainland China. We administered four predictor scales (School Satisfaction, Self-concept, Relationships and Resilience) and three outcome scales (Flourishing, Mental Health and Children’s Wellbeing) to 2,756 primary and middle school students in mainland China. Confirmatory factor analysis indicated that the measured concepts were salient to the participants. Structural equation modelling using MPlus showed that Resilience was a strong predictor of all outcome measures, particularly for Mental Health and Positive Emotional State. Global Self-Concept was the most notable predictor for Positive Outlook, while School Satisfaction was the strongest predictor of Flourishing. The results indicate potential areas for school-based competency building initiatives to promote mainland Chinese students’ wellbeing.

KEYWORDS

mainland China; primary and middle school students; wellbeing; resilience; flourishing; mental health promotion
1. INTRODUCTION

There is increasing global awareness of the need to attend to students’ wellbeing and mental health. For example, in January 2017 the UK Prime Minister announced new policy initiatives to support students’ mental health, such as the introduction of mental health first aid training into all secondary schools (BBC, 2017). In the US, new federal education legislation was introduced in 2015, the *Every Student Succeeds Act*, which mandates the provision of social and emotional education in schools (CASEL, 2016). In Australia, the Roadmap for National Mental Health Reform: 2012–2022 (COAG, 2017) identifies promotion, prevention and early intervention for positive mental health as essential actions. One strategy for operationalising mental health promotion in Australian schools is a 2017 Federal budget allocation of AU $52.7 million over two years to beyondblue (2017) for further developing and delivering mental health promotion initiatives in Australian schools. Schools are recognised as preferred settings for promoting wellbeing and positive mental health due to their, long-term access to children and youth; the expertise of school staff who daily interact with students; and the support of school structures, such as systems for referrals to psychological services (WHO, 2016, 2018; WHO and Health and Welfare Canada, 1986).

In contemporary China, people's wellbeing is a component of the goals outlined at the Fourth Plenum of the 16th Chinese Communist Party Central Committee (CCPCC, 2004), and embedded in the 18th Chinese Communist Party National Congress (Y. Chen & Cui, 2014). Importantly, Wong (2015) has drawn attention to the complex and profound nature of Chinese culture, and argued that uncritical transplantation of wellbeing concepts, such as American positive psychology, to Chinese soil may not be fruitful. Furthermore, although mainland China and English speaking countries have been compared along lines of collectivist versus individualist social-cultural environments (e.g., see Lu et al., 2001), China
is a rapidly developing country with a social system that is responding and reacting to increasing transactions with other countries. Thus traditional Chinese culture currently co-exists within a realm of external influences, notably in large cities such as Beijing, where McDonalds, Starbucks and other features, such as James Bond movies, abound. It is arguable that Chinese modern culture combines traditional collectivism with individualism (Kolstad & Gjesvik, 2014).

Goals to promote population wellbeing in contemporary mainland China need research programs that identify and meet the needs of the Chinese people in their unique historical and emerging cultural and political contexts (Wong, 2015). A collaborative researcher mobility project, involving mainland Chinese and Australian researchers, identified a number of school-based initiatives to promote Chinese students’ wellbeing and positive mental health. For example, our visits to primary and secondary schools in Beijing encountered processes for reporting students’ progress that focussed upon not only their academic achievement, but also upon their social and emotional capabilities. Intervention programs in the Beijing schools include ‘wellbeing rooms’ that enable students to play stress-reduction games, and schools’ focus, in the Confucian tradition, on the development of emotional regulation and cultivation of harmony and wellbeing.

Extensive discussions between our Beijing-based and Australia-based authors identified substantial shared understandings about concepts such as friendships, belonging, and happiness, thus providing a guide to our selection of measuring instruments. Cross-cultural shared understandings about wellbeing and mental health have been reported by the World Health Organisation (WHO, 2016), by Helliwell, Huang and Wang's report on the geography of world happiness (2015), by Diener, Oishi, and Ryan's (2013) multi-level review
of cultural similarities and differences, as well as studies conducted in China by Duan and Xie (2016), Tang, Duan, Wang and Liu (2016), and Tong and Wang (2017).

However, research and programs about actively promoting school students’ wellbeing are at the emergent stage in mainland China (Z. Chen & Davey, 2008). There is a need to test conceptual frameworks and to develop measurement tools that are well-fitted to mainland Chinese student populations (Tong & Wang, 2017; Wong, 2015). Accordingly, in this paper we draw from international research to investigate predictors of students’ wellbeing and mental health. A major aim of our study was to identify whether constructs that have appeared in other (mostly Australian, European and American) contexts were salient to mainland Chinese middle-years students. The primary practical value of this aim was to identify factors that could be included when designing school-based wellbeing promotion initiatives in the mainland Chinese context (e.g., developing resilience; fostering peer-relationships). A secondary aim was the validation of measures that can be used in mainland China at base-line and over-time to measure the success of such initiatives.

1.1. Perspectives about young people’s mental health

Studies have approached the conceptualisation of wellbeing from different perspectives. O’Hare and Gutierrez (2012) advised that “most analysts have conceptualized child wellbeing as a broad concept involving multiple dimensions” (p. 6). The World Health Organisation (WHO, 2017), Kazdin (1993), and Roeser, Eccles and Strobel (1998) strongly advocated that mental health consists of two dimensions: not just the absence of dysfunction, but also the presence of optimal functioning in psychological, emotional, behavioural and social thoughts and actions. Diener et al. (2009), from the perspective of positive psychology, developed the Flourishing scale, which measures psychological needs such as competence, meaningful social relationships, self-acceptance, altruism, optimism, and purpose.
Meanwhile, Lau and Bradshaw (2010) argued that subjective wellbeing is the essence of wellbeing, with Keyes (2006) surmising that “the study of subjective wellbeing has been divided into two streams of research, one [hedonic] that equates wellbeing with happiness and the other [eudemonic] with human potential that, when realized, results in positive functioning in life” (p. 4).

1.2. Predictors of young people’s mental health

Researchers have proposed that certain dispositions predict wellbeing and positive mental health. For example, resilience is a personal attribute that assists a person to effectively deal with and respond positively to any setbacks and difficulties, and to make changes and persevere. Connor and Davidson (2003) described resilience as the possession of personal qualities that enable a person to thrive in adverse conditions and which, when functional, may improve both physical and psychological health. Campbell-Sills and Stein (2007) noted that while negative affect is a common outcome for childhood maltreatment, such as depression and substance use, “not all maltreated children go on to manifest such problems and those children have been classified as ‘resilient’” (p. 1020). Studies have shown that resilience is positively correlated with factors associated with positive affect (Bonanno, 2004; Luthar, Cicchetti, & Becker, 2000; Tugade & Fredrickson, 2004) and with life satisfaction (Wagnild & Young, 1993; Yu & Zhang, 2007), suggesting that resilience plays a part in psychological wellbeing in the presence of environmental stressors (Vaishnavia, Connor, & Davidson, 2007).

Self-concept has also been related to a range of personal states, including psychological health, personal achievement, and positive relationships such as happiness, academic achievement, academic choices, addressing social relation problems (e.g., bullying, victimization, violence) in schools and mediating the adverse consequences of peer
victimization and peer rejection (Leung, Marsh, Yeung, & Abduljabbar, 2015). Marsh and Scalas (2011) explained that,

self-concept refers to a person’s self-perceptions formed through their experience and interpretation of their environment. It is influenced by evaluations of their own behaviour, and it includes feelings of self-confidence, self-worth, self-acceptance, competence, and ability (p.1).

Early work by Shavelson, Hubner and Stanton (1976) identified an hierarchical, multidimensional model of self-concept, with general self-concept at the apex of a hierarchy of second order factors, namely academic and non-academic. Building upon Shavelson et al’s studies, Marsh and colleagues’ (e.g., Leung et al., 2015; Marsh & Scalas, 2011) extended program of work supported the multi-dimensional hierarchical model, with well-delineated task specific self-concepts as well as general (global) self-concept. Leung et al. summarized that the various studies in this field indicate that enhancing self-concept can promote wellbeing.

Another hypothesised predictor for wellbeing and positive mental health is the quality of interpersonal relationships. The value of positive interpersonal relationships and their impact on wellbeing is well-documented in the literature (e.g., Gibb, 2003; Lyubomirsky, Sheldon, & Schkade, 2005; Nangle & Erdley, 2001; Rubin, Bukowski, & Parker, 2006; Wentzel, 2009). According to Diener and Seligman (2002), close personal relationships significantly contribute to happiness and have a profound impact on wellbeing.

Lastly, we turn to school satisfaction. International scholars have identified that the quality of a student’s school life is a key indicator of his or her wellbeing (Currie et al., 2008; OECD, 2009). For example, Tomyn and Cummins (2011) measured subjective wellbeing in a sample of teenagers, and identified that school satisfaction is an important component of
students’ subjective wellbeing. Measures of school satisfaction have also been included in large scale child development studies, such as the longitudinal studies of Australian children and youth (AIFS, 2017; NCVER, n.d.).

The variety of available measures of wellbeing and mental health was a major consideration for our research in mainland China. With this relatively early study, we did not wish to restrict conceptualisation and measurement of students’ wellbeing and mental health by the early selection of only one or two measures based upon one or two theoretical constructs. Rather, we considered it more useful to explore the suitability of a range of theoretical directions and their associated scales for use in the assessment and prediction of mainland Chinese students’ wellbeing and mental health. Accordingly, guided by the literature reviewed above, we investigated the predictive capacities of Resilience, School Satisfaction, Relationships and Global Self-Concept on three outcome measures, namely Flourishing, Wellbeing and Mental Health.

2. METHOD

2.1. Ethics

The Beijing Academy of Educational Sciences, which is responsible for research in Beijing Schools, provided ethics approvals for Chinese researchers to administer a set of questionnaires containing the abovementioned scales to students in selected schools in Beijing. The Academy obtained consent from school Directors and head teachers to deliver the questionnaires. The participating schools obtained opt-out consent from students’ parents/carers for their child to engage with a broad range of approved school-based research. The questionnaires were de-identified with numerical codes, and the researchers did not have access to students’ names. The Chinese researchers delivered and collected the questionnaires during regular class lessons. The Flinders University’s Social and Behavioural Research
Ethics Committee provided approval for the Australian researchers to undertake analysis of the de-identified data collected by the Chinese researchers.

2.2. **Translation of measurement instruments**

Following approval from the authors of each scale, we translated six of the seven scales into simplified Chinese characters, suitable for use on the Chinese mainland (the CD-RISC by Connor and Davidson, 2015, was already available in simplified Chinese characters).

Forward translations were undertaken by a team of researchers at the Beijing Academy of Educational Sciences, and backward translations (blind to original versions) were undertaken by an independent commercial Chinese translation company. The Australian and Chinese authors discussed multiple iterations of the translations until agreement on the final versions was reached. It is worth noting that this process of forward and backward translation and negotiation took several months until all authors were satisfied that the translation of constructs were as faithful as possible to the original constructs.

Near the end of the translation process the scale items were trialled with a small group of middle-years students (not involved in the main study) who provided feedback about the wording and meaningfulness of the scales. The wording of a small number of items that were considered problematic was revised. As noted in the Data Analysis section, confirmatory factor analyses identified a small number of items that did not make substantial contributions to their conceptualised factors. This may have been due to poor wording of the items, or that the concepts were not salient to respondents. Poorly performing items that were identified during the confirmatory factor analyses were dropped from the final scales used in the structural equation modelling (See Appendix 1).

This initial need in our study to undertake translation of the questionnaires into simplified Chinese characters illustrates the limited availability of such research instruments
in mainland China. At the time of our study there were some translations of well-known scales into Chinese, such as the Flourishing scale (Diener et al., 2009) and the Strengths and Difficulties Questionnaire (Youth-in-Mind, n.d.). However, such translations were in traditional Chinese characters, as used for example in Macau, Hong Kong and Taiwan, but were not suitable for the Chinese mainland, where the population uses simplified Chinese characters.

2.3. Predictor scales

School Satisfaction scale

We adopted 12 items from the School Life Questionnaire (ACER, 2015). This scale has been extensively used, such as in the Longitudinal Study of Australian Children (AIFS, 2017) and the Longitudinal Study of Australian Youth (NCVER, n.d.). In addition, we composed four items to capture students’ perceptions of school support and belonging. Responses to the combined scale are on a 6-point Likert scale rating of Very Strongly Disagree to Very Strongly Agree (1-6). Sample items are:

I enjoy being at school

我享受在学校里

The school makes me feel that I will be a success

学校让我觉得自己会成功

Global Self-Concept scale

Marsh’s (1990) Self-Description Questionnaire has been extensively used and refined (e.g., see Leung et al., 2015). It includes a global self-concept dimension that uses six items to measure participants’ positive perspectives about themselves. The term self-concept refers to “a person’s self-perceptions formed through their experience and interpretation of their
environment” (Marsh & Scalas, 2011 p.1). Respondents answer along a 5-point Likert-type scale of “never”, “rarely”, “sometimes”, “most of the time” or “always”. A sample item is:

I can do things as well as most other people

我做事情能和大多数人一样好.

**Resilience scale**

Connor and Davidson’s (2015) Resilience (CD-RISC) scale was purchased from its authors (already in simplified Chinese characters). Connor and Davidson’s 2015 review of a range of studies indicated that the CD-RISC has good psychometric properties, including when used with adolescents and adults in mainland China (Y. Chen et al., 2014; Ying, Wu, Lin, & Jiang, 2014; Yu et al., 2011; Yu & Zhang, 2007). Students were asked to respond to the (short-form) 10 item CD-RISC by considering how each statement applied to them “over the last month”, using responses “not true at all”, “rarely true”, “sometimes true”, “often true”, and “true nearly all the time”. A sample item is:

I tend to bounce back after illness, injury, or other hardships

在生病、受伤或困难之后，我很容易就能恢复过来.

**Relationships scale**

We selected eight items about positive relationships from the pro-social scale of the Strengths and Difficulties Questionnaire (Youth-in-Mind, n.d.) and from the Peer Relations Questionnaire (Rigby & Slee, 1993; Slee & Rigby, 1993). The Strengths and Difficulties Questionnaire has been used in more than 95 countries including Britain, Australia, the US, Japan and China (Youth-in-Mind, n.d.). The Peer Relations Questionnaire has been extensively used in Australia and internationally (e.g., Bond, Wolfe, Tollit, Butler, & Patton; Mariani, Webb, Villares, & Brigman, 2015; Tabaeian, Amiri, & Molavi, 2012), however, to
our knowledge, not in mainland China. Students selected from three point and four point (respectively) response options. Each of these scales provide items with good face validity, such as,

I get along with other students

我和其他学生相处融洽.

I feel that I have a sense of togetherness with other students in my class

我觉得自己和班级其他学生是一个和谐的集体.

2.4. Wellbeing measures (Outcome scales)

Flourishing scale

Diener et al. (2009) proposed that flourishing consists of a combination of functioning effectively and feeling good about oneself. Diener et al. argued that their Flourishing scale “provides a good assessment of overall self-reported psychological wellbeing” (p. 260). It includes items about meaning and purpose, supportive and rewarding relationships, engagement and interest, contributing to the wellbeing of others, competency, self-acceptance, optimism and being respected. In keeping with a positive psychology approach (Seligman & Csikszentmihalyi, 2000), all items are positively phrased. The Flourishing scale has been found to be well correlated with other psychological wellbeing scales, such as the Scale of Positive and Negative Experience (Diener et al., 2010) and has shown good psychometric properties with adolescent student samples in mainland China (Duan & Xie, 2016; Tang et al., 2016) and Australia (Skrzypiec, Askell-Williams, & Slee, 2015), and with adults in Macao, using traditional Chinese characters, (Tong & Wang, 2017). The Flourishing scale uses a 7-point Likert scale ranging from “very strongly disagree” to “very strongly agree”. A sample item is,
I lead a purposeful and meaningful life

我的生活有目标、有意义。

**Mental Health Continuum**

Keyes (2002) proposed a model of mental health whereby mental health and mental disorder are separate states of functioning. Keyes argued that “the study of subjective wellbeing has been divided into two streams of research, one that equates wellbeing with happiness and the other with human potential that, when realised, results in positive functioning in life” (p. 4). Keyes (2005, 2006) developed the Mental Health Continuum, which comprises three subscales, namely emotional, social and psychological wellbeing. The first subscale follows the hedonic tradition and is related to emotional wellbeing, while the second subscale is in the tradition of eudaimonia and is associated with social and psychological wellbeing.

The 14-item (short form) of Mental Health Continuum has been found to have good internal consistency as well as discriminant validity in adults (Keyes et al., 2008; Lamers, Westerhof, Bohlmeijer, ten Klooster, & Keyes, 2010) and adolescents aged 12–18 (Keyes, 2005). Confirmatory factor analysis with a South Korean sample of 547 adolescents (aged 14 to 17 years) replicated the original English-language three-factor structure of emotional, psychological, and social well-being (Lim, 2014).

The Mental Health Continuum requires participants to respond to questions about how often in the past month they have experienced hedonic and eudaimonic feelings on a 6-point Likert-type scale of “never”, “once or twice”, “about once a week”, “2 or 3 times a week”, “almost every day” and “every day”. A sample item is

*During the past month, how often did you feel:*

that you had warm and trustworthy relationships with others

和他人有着温暖而值得信赖的关系.
Stirling Children’s Wellbeing scale

The 15 item Stirling Children’s Wellbeing scale was developed by Liddle and Carter (2010, 2015) specifically for young people aged 8-15. It comprises two subscales, namely, Positive Emotional State and Positive Outlook, as well as a three-item social desirability subscale (to identify biased responders). Liddle and Carter stressed the need to differentiate mental health from mental illness by using a positive measure of healthy functioning to assess wellbeing rather than relying on a deficit-based understanding of mental health.

Liddle and Carter (2010, 2015) reported that the Stirling Children’s Wellbeing scale showed good psychometric properties. The questionnaire asks students about how they have been thinking and feeling over the past couple of weeks with 5-point Likert-type scale items of “never”, “not much of the time”, “some of the time”, “quite a lot of the time”, and “all of the time. A sample item is,

I think good things will happen in my life

我想我的生活中会有好事发生.

In addition, the questionnaire included three items designed to identify students who provided socially desirable responses, namely,

I have always told the truth

我总是实话实说;

I like everyone I have met

我喜欢我遇见的所有人;

I always share my sweets with others

我总是和别人分享我的零食.
Students who selected “strongly agree” to all three of these items would receive a total score of 15, suggesting that they were providing socially desirable responses to these three items, and by implication, to other sections of the questionnaire.

In considering the age-appropriateness of the scales used in our study, the Stirling Children’s Wellbeing scale, Peer Relations Questionnaire, School Life Questionnaire, Global Self-Concept scale and the Strengths and Difficulties questionnaire were developed for primary and secondary students (with some scales also having versions for older students and adults). Meanwhile, the Mental Health Continuum and the Flourishing scale, although originally designed for adults, have been successfully used across a range of age groups, as discussed in the relevant section for each scale, above.

2.5. Participants
A large sample of 2,756 Chinese middle school students was recruited from 64 classes in 16 schools in Beijing. The Beijing Academy of Educational Sciences approached four educational sciences institutions in four different districts of Beijing, namely A) Fengtai, B) Shijingshan, C) Daxing and D) Tongzhou. These four districts of Beijing are spread across the east, south and west of the central city (see map of Beijing at http://map.baidu.com/).

There are four geographic categorizations according to the urbanization development of Beijing, namely, capital core functions area, urban extended functions area, urban new development area, and ecologic sustainable development area. Districts A and B are located in the urban extended functions area whilst districts C and D are located in the urban new development area. These zones include a range of metropolitan Chinese socio-economic classes (e.g., traditionally settled families and newer mobile families, but excluding internal rural migrant families whose children are not enrolled in urban schools). Average annual disposable income per capita in the zones was mid-range: from 33,662 to 38,657 RMB,
within an overall range for Beijing zones of 31,132 to 45,953 RMB per annum (see Beijing Statistical Net at http://www.bjstats.gov.cn/tjsj/).

Each of the educational sciences institutions were asked to select two typical state-run primary schools and two typical state-run secondary schools in their district. None of the participating schools were currently or previously key¹ schools. Students were aged 10 to 15 years, in Grades 5 and 6 (primary school) and 7 to 9 (middle school).

The researchers administered the pen and paper questionnaires during students' regular class lessons. All students present in class on the day of data collection participated in the study.

2.6. Data analysis

Seven questionnaires that were substantially incomplete or showed minimal variance in responses (e.g., selecting all “Strongly Agree”) were discarded. A large proportion of 19.8% (545) students achieved a full score of 15 on the three socially desirable response items. The authors discussed the ways in which the three social desirability items might be interpreted by Chinese students. Did these three items simply reflect students’ desire to please the researchers and/or their teachers; did they truly reflect a population of Chinese students whose subjective assessments of their wellbeing were substantially positive; or did they represent a more complex relationship between students’ recognition of their collectivist culture’s deep-rooted goals for social harmony and their own perceived wellbeing? The

¹ Key Schools, which are now being phased out in Beijing, were given priority in the assignment of teachers, equipment, and funds, and were permitted to recruit high performing students.
relative merits of retaining or discarding such a large proportion of participants’ responses based upon the three social desirability items were considered. We conducted a series of descriptive analyses and factor analyses with the full sample and the smaller sample (with the indicated socially desirable respondents removed). The factor structures were consistent between the full and smaller samples. However, responses to items by the full sample were considerably more skewed, thus showing less variation on all scales. Following extensive consideration of the statistical and potential cultural implications of removing the apparent socially desirable responders from the data set, we opted for the more conservative approach, which was to remove the 545 questionnaires from further analysis. We are conscious that this decision may have cultural implications, and that future decisions of this type need to be carefully considered in light of local contexts.

Using the reduced data set, first we undertook confirmatory factor analyses (CFA) of each of the seven questionnaire scales. Next, we undertook structural equation modelling of the four predictor measures onto the three outcome measures of wellbeing. We used robust maximum likelihood (MLR) and full information maximum likelihood (FIML) estimation in MPlus (Muthen & Muthen, 2010). MLR is robust to skewed data, which is to be expected when measuring wellbeing and its related factors in a non-clinical sample. FIML accommodates missing data. We used the MPlus command “type = complex” to account for the nested structure of the survey data (students in classes, in schools).

Model fit was assessed using commonly accepted cut off points for indicators. Hu and Bentler (1999) advised that when using the Maximum Likelihood method, values of .95 or more for TLI and CFI; .08 or less for SRMR; and .05 or less for RMSEA indicate a good fit.
with the data. We used Hancock and Mueller’s (2001) Coefficient H to assess scale score reliability. Values of H above 0.70 suggest good reliability.

3. RESULTS

All students present in class on the day of data collection completed questionnaires. There were slightly more boys than girls in the sample, possibly reflecting the higher percentage of boys compared to girls in the broader Chinese population (males, 51.23%; females, 48.77%, National Bureau of Statistics of China, 2015). Students’ ages ranged from 10 to 15 years (M = 12.43; S.D. = 1.53).

3.1. Confirmatory factor analysis

On the whole, the theoretical constructs measured by the scales performed according to their original conceptualisations with our mainland Chinese sample, with some minor item modifications such as dropping items that cross-loaded and correlating items that suggested a sub-factor (Field, 2006; Kline, 2011). Appendix 1 provides full details of the confirmatory factor analyses and reliability analyses for each of the seven scales, including the number of items that were retained and deleted in each scale, and the fit indices.

3.2. Structural equation modelling of predictors of wellbeing

Figure 1 displays a model of the four predictors, Resilience, Global Self-concept, School Satisfaction and Relationships on the three wellbeing measures. (Note that we present the Stirling Children’s Wellbeing scale showing its two subscales, namely Positive Emotional State and Positive Outlook, to highlight the different influences of the predictors on those two sub-scales). The model shows that Resilience features as a significant predictor of all

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2 Coefficient H is an improvement over the traditionally used Cohen’s alpha for assessing scale reliability. H recognises that not all items contribute equally to a factor, thus incorporating the scale weights to calculate reliabilities (Brunner & Heinz-Martin, 2005).
outcome measures. In particular, it appears to be of particular importance for mental health (as measured by the Mental Health Continuum). School Satisfaction was the strongest predictor of Flourishing, but it was not a significant predictor of Positive Emotional State. The model in Figure 1 also shows that, although relatively weak, the most influential predictor of Positive Outlook was Global Self-Concept.

It can be seen in Table 1 that all but one of the zero-order correlations between the predictor variables were moderate, however Relationships and School Satisfaction were strongly correlated ($r = 0.891$) suggesting that these two scales may be tapping into a common construct. Meanwhile, Table 2 shows the correlations between the wellbeing scales, indicating that the three measures are tapping into moderately related, but different, aspects of positive functioning.

4. DISCUSSION

The structural equation modelling of the predictors and outcome measures of wellbeing and mental health suggests that different aspects of wellbeing are predicted by different factors. It is notable that Resilience was a strong or strongest predictor of all of the wellbeing measures. Our finding that a range of predictors, but in particular Resilience, influence wellbeing and positive mental health in different ways is consistent with a study by Rodríguez-Fernández et
al. (2016), who administered a range of measures to 1,250 secondary students from the Basque Country. In that study, structural equation modelling showed that self-concept directly influenced Subjective Wellbeing, Resilience and School Engagement. In turn, Resilience also directly influenced Subjective Wellbeing. Similarly, a multi-scale structural equation modelling study by Aldridge et al. (2016) of 2122 students from six public high schools in Perth, Western Australia, demonstrated that students who perceived greater Teacher Support, Peer Connectedness and School Connectedness were more likely to report a greater sense of Resilience. In turn, Resilience significantly influenced Life Satisfaction and Student Wellbeing.

However, the structural equation models by Rodríguez-Fernández et al. (2016) and Aldridge et al. (2016) were calculated using AMOS in SPSS, and thus were unable to account for the nested nature of students in schools and classrooms. The effect of ignoring non-independence is that the standard errors are under-estimated and the outcome is an over-estimation of significant effects (Asparouhov, 2005; Kline, 2011; Muthen & Muthen, 2010). That is, variance that should be attributed to systemic factors such as class membership may have been incorrectly attributed to students. In the present study, our use of the complex analysis option in MPlus accommodated this issue of nested data.

An MPlus analysis by Liu, Wang, Zhou and Li (2014) with 412 undergraduate students in Northwest China showed significant pathways from Resilience directly to Life Satisfaction, and also indirectly through Self-esteem. In addition, in Liu et al.’s study, Resilience showed an impact on Psychological Distress, through the mediating variables Positive Affect, Negative Affect, and Self-Esteem. Similarly, a multi-level modelling study by Ying, Wu, Lin and Jiang (2014) of 788 secondary students, who had experienced earthquakes in the Chinese provinces of Wenchuan and Maoyuan, illustrated that Resilience
was negatively and significantly associated with individual Post Traumatic Stress Disorder and Depressive Symptoms. Recently, in a study of 484 academically gifted students in southern China, Chen, Cheung, Fan and Wu (2018) found that hope, creativity, and curiosity are related to students’ resilience – thus providing useful targets for resilience promotion programs. The picture that emerges from our study and the related studies referred to above, is that implementing school-based programs that aim to build students’ resilience is potentially a fruitful area for promoting wellbeing and mental health.

The other predictors in this study are also useful candidates for wellbeing promotion initiatives. For example, the strong influence of Global Self-Concept on the Positive Outlook subscale attests to the importance of nurturing students’ positive self-perspectives with a view to encouraging their hope about their future successes (Marsh & Craven, 2006). Relationships also featured strongly as a predictor of all three measures of wellbeing and mental health in our study. This result is consistent with findings from extended research by Slee and colleagues (e.g., Rigby & Slee, 1993; Slee, 1994, 1995; Slee & Murray-Harvey, 2011) in the field of positive relationships and interactions between peer bullying and mental health difficulties such as anxiety and depression. Similarly, Diener, Seligman and colleagues’ (e.g., Diener, Oishi, & Lucas, 2015; Diener et al., 2013; Diener & Seligman, 2002; Diener & Seligman, 2004) work in the field of positive psychology in the USA and international contexts highlights the importance of psychosocial factors, including interpersonal relationships, for nurturing positive feelings.

4.1. Limitations

Our interest in this study was in identifying potential areas for school-based universal wellbeing and mental health promotion, as well as to identify measures that could be useful to identify the success of such initiatives. We therefore accessed the regular school population,
namely, all children present in class on the day of data collection, who could be considered to possess a range of academic abilities, and a range of states of wellbeing and mental health/mental ill-health. This paper does not include information about students' learning difficulties, medications, physical, or diagnosed medical conditions. These additional demographic indicators, which have been linked to student mental health in other contexts, were beyond the scope of our study, but would be informative in further studies.

Universal mental health promotion programs are suitable for students in all year-levels. Our research team was given access to 64 Beijing schools catering for the compulsory years of schooling in China, namely, years one to nine. In consultation with the teachers in participating schools, we determined that the wording of the items in the questionnaires were suitable for students in Years five and above. A limitation of this study is that it did not include students in the non-compulsory school Years 10 to 12, a sample of which would be a useful addition to this area of enquiry.

The data collected for this study relied upon self-reports, which are subject to the potential for socially-desirable responding (which was addressed in this study), and personal blind spots, as discussed by Muijs (2006). Nevertheless, self-reports are valuable sources of data, particularly in the field of subjective assessments about psychological constructs such as personal wellbeing. Future studies could triangulate self-report data with reports from students’ parents and teachers.

Although the aim of this study was to investigate mainland Chinese students, it is a limitation that participants were sampled from the city of Beijing. Caution should be taken when generalising findings to other settings.
5. CONCLUSIONS

Our research has shown that seven measurement scales initially developed in English-speaking cultures have maintained their conceptual structures when used with students in mainland China. And furthermore, that Resilience, Global Self-concept, School Satisfaction and Relationships were shown to be significant predictors of students' wellbeing, as they have in other cultural contexts (e.g., Skrzypiec, Askell-Williams, Slee, & Rudzinski, 2014). The psychological concepts addressed in our study are theoretically and practically useful for further cross-cultural research that seeks to enhance our understandings about human development.

At the practical level, interventions that build students’ resilience, foster peer relationships, develop positive school communities to promote students’ satisfaction with school, and develop students’ positive sense of self, appear to be as salient to the mainland Chinese students in our sample as has been demonstrated in studies with students in Europe, the USA and Australia.

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Tables

Table 1: Correlations between Predictor Variables
Table 2: Correlations between Outcome Variables

Figures

Figure 1: Structural Equation model of four predictors on Flourishing, Mental Health Continuum and the Stirling Children’s Wellbeing Scale (Positive Outlook and Positive Emotional State)

Appendix 1

Confirmatory factor analysis, reliability analysis and fit statistics for the seven scales
Table 1: Correlations between Predictor Variables

<table>
<thead>
<tr>
<th></th>
<th>Global Self-Concept</th>
<th>Relationships</th>
<th>School Satisfaction</th>
</tr>
</thead>
<tbody>
<tr>
<td>Resilience</td>
<td>0.669***</td>
<td>0.596***</td>
<td>0.619***</td>
</tr>
<tr>
<td>Global Self-Concept</td>
<td>0.551***</td>
<td>0.574***</td>
<td></td>
</tr>
<tr>
<td>Relationships</td>
<td></td>
<td>0.891***</td>
<td></td>
</tr>
</tbody>
</table>

*** p < .0001
Table 2: Correlations between Outcome Variables

<table>
<thead>
<tr>
<th></th>
<th>Mental Health</th>
<th>Children’s Wellbeing (Positive Outlook)</th>
<th>Children’s Wellbeing (Positive Emotional State)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flourishing</td>
<td>0.227***</td>
<td>0.379***</td>
<td>0.355***</td>
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<tr>
<td>Mental Health</td>
<td></td>
<td>0.275***</td>
<td>0.364***</td>
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<tr>
<td>Children’s Wellbeing (Positive Outlook)</td>
<td></td>
<td></td>
<td>0.608***</td>
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*** p < .0001
Appendix 1: Confirmatory factor analysis, reliability analysis and fit statistics for the seven scales

<table>
<thead>
<tr>
<th>Scale</th>
<th>No of Items</th>
<th>Chi-square of model fit</th>
<th>p</th>
<th>CFI</th>
<th>TLI</th>
<th>RMSEA</th>
<th>90% CI</th>
<th>RMSEA &lt;= .05</th>
<th>SRMR</th>
<th>H</th>
<th>Deleted items</th>
<th>Items correlated</th>
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</thead>
<tbody>
<tr>
<td>Flourishing</td>
<td>8</td>
<td>$\chi^2(18) = 64.77$</td>
<td>.000</td>
<td>.993</td>
<td>.989</td>
<td>.034</td>
<td>.026-.044</td>
<td>.998</td>
<td>.015</td>
<td>.932</td>
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<td>$\chi^2(74) = 396.33$</td>
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<td>.968</td>
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<td>.040-.049</td>
<td>.979</td>
<td>.027</td>
<td>.946</td>
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<td>Children's Wellbeing</td>
<td>12</td>
<td>$\chi^2(42) = 211.83$</td>
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<td>.043</td>
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<td>Resilience</td>
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<td>$\chi^2(34) = 162.71$</td>
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<td>.977</td>
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<td>Global Self-concept</td>
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