

Improving Well-being, Academic
Achievement, and Social Emotional Skills in
Chinese Adolescents: *from Latent Profile
Analysis and Intervention Evaluation*



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Declaration

This thesis is the result of my own work and includes nothing which is the outcome of work done in collaboration except as declared in the Preface and specified in the text. It is not substantially the same as any that I have submitted or is being concurrently submitted for a degree or diploma or other qualification at the University of Cambridge or any other University or similar institution except as declared in the Preface and specified in the text. I further state that no substantial part of my thesis has already been submitted, or is being concurrently submitted for any such degree, diploma or other qualification at the University of Cambridge or any other University or similar institution except as declared in the Preface and specified in the text. It does not exceed 80,000 words.

Abstract

Young people are prone to mental health issues, social, emotional, and behavioural challenges, and academic burdens during adolescence. These issues are particularly prevalent in the school environment. However, research in China lacks both theoretical understanding and effective interventions to address these situations. Thus, the thesis first investigates which types of social behaviour and social status patterns are associated with optimal well-being and academic achievement outcomes (Study 1). Furthermore, it incorporates Mindfulness-based Cognitive Therapy (MBCT) and Social Emotional Learning (SEL) approaches to explore whether these Western- developed interventions can improve Chinese adolescents' social emotional skills, academic achievement, and well-being (Study 2), as well as further unpack their experience and beliefs about what and how this adapted Mindfulness-based Intervention (MBI) helps them in terms of behavioural change (Study 3).

Study 1 recruited 818 Chinese adolescents (aged 12-15 years, 46 percent female) and employed latent profile analysis to discover naturally occurring social status- behaviour patterns. Four distinct social status profiles were identified: high aggressive- low likeability, low social status, average, and high prosocial-high social status groups. This study demonstrated that adolescents with the highest levels of prosocial behaviour, the lowest levels of aggressive behaviour, and the highest social standing had the best academic and well-being outcomes.

In Studies 2 and 3, a mixed-method approach was used to study 552 teens (Mean age= 13.03, SD = 0.50, 47.5 percent females) from an urban Chinese private school, with 184 in each of the 3 conditions (taught, self-help, and active control groups). These studies indicated associations between the implementation of MBIs and improvements in the well-being and prosocial behaviours of Chinese students. In particular, the self-help method, which revealed fewer adverse outcomes, was supported by teachers. The qualitative data from students revealed four themes that all align with the theoretical foundations of MBCT, which were “behaviour change”, “state change”, “attitude change”, and “no changes”. Cognitive changes and handy

techniques such as breathing were reported to be beneficial for pupils to regulate their negative responses.

Taken together, this PhD thesis highlights the necessity of studying well-being, academic achievement, and social emotional skills within a single model and emphasizes the importance of enhancing them as a bound entity using theoretical modelling and intervention evaluation. Findings provide a better understanding of the relationships between these developmental tasks and suggest a possible intervention to be further considered in resource-scare places.

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“In general, all men really seek what is good, not what was customary with their forefathers.”

Aristotle, 1269a3-4

“一念开明，反身而诚。”¹

王阳明，166

¹ Translation: As soon as a single thought is enlightened, and one examines himself and becomes sincere, the joy is present right there. 《Instructions for practical living and other neo-Confucian writings》 translated, with Notes, by Wing-tsit Chan.

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This thesis contains three papers at various stages of publication.

Contributions from my supervisors do not exceed the average supervisor input in PhD research.

Chapter 1: Introduction

In the period of early adolescence, children explore their independence and develop a sense of self through social interaction (Erikson, 1950). They are biologically, emotionally, and developmentally primed for involvement outside of their families, and schools represent the most significant context for socialisation during this time period (Ladd, 1989). As of 2017, there were 20.74 million middle school boarders, accounting for 46.7% of total middle schoolers in China (Ministry of Education, Essential Statistical Analysis of Education Development in China, 2018). With a need to develop self-identity (Erikson, 1968), adolescents in schools not only have challenges in their academic life but also in how they interact with peers, gain acceptance and status, especially for those boarders, considering the time spend with their peers. The importance of schools on adolescents' development is particularly stronger in the Chinese context.

More and more longitudinal research findings indicate that students with social difficulties tend to fail academically over time (e.g., Schwartz et al., 2003). More recently, a Developmental Cascade Model contends that positive adjustment (e.g., prosocial behaviour) in one domain can lead to subsequent success (e.g., academic) in another (Masten & Cicchetti, 2010). Thus, the value of social-emotional skills as the foundation and mediator of academic and cognitive skill development has garnered increased emphasis in educational research in recent decades (Goleman, 2006). As a result, *academic achievement*, *social competence*, and *well-being* are the major developmental goals that students must attain in order to achieve school engagement and adaptation (Ladd, 1989; Erikson, 1950; Wentzel, 1991).

The increased prevalence of mental health and well-being issues (Patton et al., 2016), as well as the social, emotional, and behavioural challenges that teenagers face within schools, calls for more attention to how schooling facilitates adolescents' psychological development. However, adolescents have typically been underrepresented in social and global health policy, which may be why they have

benefited less from economic progress in terms of health versus other age groups (Patton et al., 2016). More and more researchers believe schools have responsibility for both the well-being and academic success of their students (e.g., OECD, 2015; O'Shaughnessy, 2015) and improving well-being has become an emphasised policy goal in Western countries (Layard et al., 2014). Similar in China, the 2015–20 National Mental Health Work Plan for China mandates the inclusion of mental health counselling offices in elementary, middle, and high schools, staffed by full- or part-time teachers. These show an increasing awareness of well-being and mental health in the Chinese education system; however, it still lacks both theoretical research and evidence-based interventions to support students or professionals (e.g., Wang et al., 2020).

Curriculums and interventions for improving well-being and social emotional learning have been embedded within schools in developed countries. Under the umbrella of the National Strategies 1997-2011, the Social and Emotional Aspects of Learning (SEAL) program was under implementation in around 90% of primary schools and 70% of secondary schools in the UK by 2010 (Humphrey, Lendrum, & Wigelsworth, 2010). In 2021, the General Office of the Ministry of Education in China announced that “Primary and secondary schools should incorporate mental health education classes into their curriculum, focusing on arranging various forms of life and resilience education.” It is a significant step for the Chinese education system to integrate mental health courses; yet there is a lack of training and course materials for schools and mental health teachers. This missing piece for improving students’ soft skills still has not received enough attention in Chinese schools.

Taken together, there are both theoretical and practical gaps in the Chinese setting when it comes to enhancing students' well-being, academic achievement, and social skills. Furthermore, the overall understanding of adolescents’ academic achievement, well-being, and interpersonal relationships is based on the knowledge of people from Western, educated, industrialized, rich, and democratic (WEIRD) cultures. Studies have found that WEIRD people account for 12% of the world's

population, which is unrepresentative of humans as a species, but they account for 80% of research participants in the psychology field (Henrich, Heine, & Norenzayan, 2010). Thus, studying Chinese adolescents is a valuable field of inquiry for my own research interests and my previous training as a counsellor; but more importantly, it enables me to contribute a more diversified picture of human development to the field of research as a whole. Furthermore, the cultural context has a significant impact on how teenagers develop and adjust. For example, the definitions of adaptive and maladaptive behaviours vary depending on the cultural environment (Chen et al., 2000). Consequently, it is essential to examine the development of adolescents considering cultural specifics, which I, as a Chinese, could contribute to bring a more indigenous perspective.

Researchers concur that "schools are potentially powerful setting for delivering effective interventions to support well-being, to prevent mental health problems, and to triage identified difficulties" (Ford, 2021, p1468). An evidence-based and context-appropriate intervention could be beneficial for Chinese schools in ameliorating the previously mentioned difficulties. My previous training in mental health counselling made me aware of the evidence-based Mindfulness-based Intervention (MBI), which has been broadly utilized in the Western educational system but has its roots in Eastern culture. Moreover, school-based MBI is beginning to become a component of the social-emotional learning curriculum and has demonstrated positive effects on the social skills, well-being, and mental health of adolescents (e.g., Emerson et al., 2020). Based on the potential of MBI, it was introduced in this research to determine whether it could be used in Chinese middle schools to improve well-being, academic achievement, and social emotional skills.

The title of this thesis is " Improving Well-being, Academic Achievement, and Social Emotional Skills in Chinese Adolescents: From Latent Profile Analysis and Intervention Evaluation ". In broad outline, the first part of the research seeks to provide a more thorough understanding of the relationship between academic achievement, social skills, and well-being in a Chinese school setting. The second part

of the study is meant to evaluate the effects of MBI on Chinese teenagers' well-being, academic achievement and social skills and its implementation in schools.

This chapter (Chapter 1) provides an overview of the need to further research well-being, academic achievement, and peer relationships in Chinese schools. Chapter 2 lays the groundwork for the entire thesis. Well-being, academic achievement, prosocial and aggressive behaviour, and social status are all illustrated. Following this literature review, the rationale for three studies is outlined in this chapter. Following that, Chapter 3 outlines the thesis's overarching research strategy and methods.

Chapters 4-6 are three stand-alone papers (either published or under review); each of these chapters contains a focused literature review pertaining to the subject matter of the particular research topic. Chapter 4 explores the relationship between prosocial behaviour and aggressive behaviour in the context of peer relations and further investigates the membership relating to well-being and academic achievement. Chapter 5 investigates the effectiveness of an MBI in impacting students' emotions and behaviour and influencing their well-being and academic achievement in China. It also provides teachers' perspectives on this MBI training. Chapter 6 explores how this MBI changes students' behaviours and academic performance in their own words. Chapter 7 addresses all of the findings in this thesis and adds an extended discussion based on synthesis findings from the three studies. It goes on to discuss the overall limitations, address the theoretical and practical implications of key contributions, and suggest the future research directions. Finally, the conclusion summarises the entire thesis.

Chapter 2: Literature Review

This chapter can be best treated under two subchapters: 1) a literature review of the relationship between well-being, academic achievement, and peer relations; 2) a literature review of mindfulness-based intervention and its effects on well-being, academic achievement, and social behaviour. The purpose of this chapter is to lay the groundwork for the following chapters' more focused literature reviews.

A literature review of the relationship between well-being, academic achievement, and peer relation

During adolescence, *well-being*, *academic achievement*, and *peer relationships* are arguably the most essential development goals for teenagers to obtain and for schools to promote (see Chapter 1). In the first subchapter, I first present an overview of well-being, academic achievement, and peer relationships in both Western and Chinese contexts, with literature reviews of existing studies and associations among these constructs. Following that, I address the limitations of earlier studies as well as the rationale for proposing Study 1, which uses an LPA to examine the relationships between the three constructs from a person-centred perspective.

2.1 Well-being

The literature on well-being is broader than just adolescents' literature; it spans a wide range of disciplines and is strongly influenced by Western philosophical tradition. This section introduces the well-being literature, including its related terms, two well-being paradigms, and well-being related topics in China.

2.1.1 Well-being and related terms

Well-being and happiness are two often interchangeably used terms in Western

research on well-being. The meaning of the word "happiness" in Western society has undergone significant change over a long and complex historical development, as demonstrated in the book *Happiness: A History* (for review, McMahon, 2006). From the Oxford English Dictionary of Words, "well-being" is interpreted as "1. With reference to a person or community: the state of being healthy, happy, or prosperous; physical, psychological, or moral welfare; 2. With reference to a thing: good or safe condition, ability to flourish or prosper." And "happiness" is defined as "the quality or condition of being happy" (OED, 2022). Happiness can be understood as a positive emotion, a long-term satisfaction with life, or referring to an all-round state of well-being (Diener et al., 2017). This word is frequently used in common parlance and in the popular press, with different meanings, leading to misunderstandings. Therefore, Diener and his colleagues (2018) pointed out that the term "happiness" is not a useful scientific phrase due to its broad use, suggesting that "well-being" should be used in scientific discussions. To date, based on my independent search in the core of the Web of Science, there are currently 20,000 published articles on the topic of "happiness", whereas 160,000 articles on "well-being" and "wellbeing". Thus, the term "well-being" is appropriate and more commonly used in the academic context, as well as in this research.

As multidisciplinary studies in the field of well-being have become more prevalent, mental health is another linked term that needs to be discussed. Life events, for example, have been found to be connected to both emotional disorders and well-being (affects) (Ford et al., 2004; Stallings et al., 1997), implying that they are linked in some aspects. Although mental health is typically discussed in relation to mental illness or mental disorder, studies note that mental health encompasses more than just the absence of mental illness or a high level of subjective well-being. In a paper by Keyes (2002), the DSM-III-R (American Psychiatric Association, 1987) was used as a theoretical model of a mental health diagnosis consisting of emotional, psychological, and social well-being. In a sample of adolescents, Wilkinson and Walford (1998) found evidence in favour of a two-factor model of mental health made up of distinct

well-being and psychopathology variables. In other words, well-being and psychopathology may not represent two ends of a single spectrum (Harding et al., 2019). Although the issues in the social, emotional, and psychological well-being domains are also attributed to the development of mental health issues (Raviv et al., 2009), someone with mental health issues can still experience high well-being. Furthermore, there is also no doubt that maintaining a high degree of well-being may serve as a buffer to prevent children from developing chronic mental health problems. This thesis is more emphasised on adolescents' well-being, more literature reviews on mental health can be found in Chapters 2.6, 5, and 6. With a general idea of well-being illustrated in this section, the following section sets out how well-being is conceptualized in research.

2.1.2 Two well-being paradigms

Nearly 50 years of well-being research in modern psychology in the West can be generally divided into two distinct happiness-seeking paradigms, hedonia and eudaimonia, each with its own understanding of what a well-lived life is (Ryan & Deci, 2001). Researchers in hedonistic happiness studies are interested in subjective well-being (SWB), assessing whether people are satisfied with their lives and have more pleasant emotions than negative emotions, whereas eudaimonic researchers focus on self-realisation and personal development, goals, and growth, which is typically measured using a psychological well-being (PWB) scale (Ryan & Deci, 2001). It is necessary to understand the evolution of these concepts in order to better understand what has been discovered in empirical research. The following sections demonstrate these two traditions of studying well-being.

Hedonism and Hedonic Well-being. The study of happiness in the hedonistic philosophical tradition emerged earlier than the Eudaimonic paradigm and is currently the main source of well-being research. Hedonism was first espoused by Aristippus, a Socratic follower who believed that happiness was the sum of all pleasant experiences and that the purpose of life was to maximize happiness (Tsouna, 2020). For typical

hedonists, as Hobbes believed, happiness derived from the satisfaction of appetite; later hedonistic paradigms developed, such as Aristippus's understanding of happiness, which is broader, where he believes that the goal of life is to experience maximum joy and happiness (McMahon, 2006). The depiction of happiness in hedonistic psychology is more partial to the latter, not only to physical satisfaction but also to the preferences and pleasures of the mind and body (Kubovy, 1999). This school of thought believes that humans can obtain happiness by pursuing pleasure. Therefore, more pleasant emotions and fewer unpleasant emotions, in addition to high life satisfaction, are highly appreciated.

In the past several decades, academics, especially economists and sociologists, have utilized a single question to determine an individual's level of life satisfaction and pleasure (Diener et al., 2009). The one-question life satisfaction scale (e.g., like my happiness is X out of 10) is often used in large studies or government censuses because it is easy to use and has good psychometric properties (Kaiser & Oswald, 2022). Later, in the psychology field, there have been more added options for assessing wellbeing. Subjective well-being is the most prevalent metric under the "hedonic" framework. The start of studying subjective well-being dates back to 1969. Later, Ed Diener's 1984 model, which consists of: 1) cognitive evaluation focused on one's overall life satisfaction; and 2) emotional experience, which includes the presence of positive emotions and the absence of unpleasant feelings; together, they are summarized as happiness (Aknin et al., 2013, Diener et al., 2009). Knowing the history of hedonic well-being, it is easier to understand why affect and life satisfaction are prioritised in this well-being construct. However, researchers of eudaimonic wellbeing are not fully agree on this interpretation of well-being.

Eudaimonism and Eudaimonic Well-being. In addition to the hedonic well-being paradigm, the eudaimonic well-being paradigm is a widely discussed route to "true happiness". In Aristotle's (4th century B.C.E.) *Nicomachean Ethics*, he illustrated the concept of "eudaimonia" not only as virtue, but also as conducting virtuous actions (Kraut, 2001). This generates consensus in the eudaimonic field to

understand this concept as "pursuit of virtue, excellence, and the best within us" (Huta & Waterman, 2014), a result of "living in truth to one's daimon" or "true self" (Norton, 1976). This paradigm holds that well-being and happiness are distinct concepts. Satisfying one's own desires can bring happiness, but not necessarily well-being (Ryan & Deci, 2001). To some extent, happiness and hedonic well-being are more concerned with whether or not people are "*feeling well*," while well-being and eudaimonic well-being are more concerned with whether or not people are "*doing well*."

Rather than relying on people's own judgements of feelings, scholars of this group often present a more structured framework for the ideal life and use this framework to determine if one's life meets the required standards. Psychological well-being is the commonly used measurement of eudaimonic well-being, which believes people achieve happiness through discovering their strengths and expressing their ideals (Ryff, 1989). Ryff's (1989) psychological well-being model consists of six components: 1) Self-acceptance, 2) A sense of personal growth and development, 3) Purpose in life, 4) Positive relations with others, 5) Environmental mastery, 6) Autonomy, which echo with three psychological needs proposed by self-determination theory, namely the need for competence, belonging, and autonomy (Ryan & Deci, 2001). Furthermore, a sense of personal growth and development reflects the self-actualisation component of Abraham Maslow's Hierarchy of Needs (1943) and Carl Rogers' expectation of fully functioning (1965). The paradigm also incorporates a human flourishing concept in which individual desires are connected with societal objectives. As Shah and Mark (2004) put it, "well-being" entails growing as a person, being satisfied, and contributing to society. Individual development, according to the eudaimonic concept, will eventually lead to collective prosperity. That is also the reason current researchers in this field sometimes use the term "flourishing" rather than "happiness" or "well-being" (Waterman, 2008). However, this model has been criticized for its Western value of accomplishment/achievement and lack of participants' opinions on what is important

for them, which makes it hard to generalize to other cultures and life circumstances (Diener et al., 1998). The following Section 2.1.3, Chapter 7, and Appendix A present more discussion about the cultural considerations in understanding well-being.

Moreover, eudaimonic well-being have not yet developed a clear, well-accepted definition of its essential components. This discipline of well-being has generated over sixty different structures to explain and assess eudaimonic well-being due to diversity in thinking about what makes "a good life" (Martela & Sheldon, 2019), such as ideas from psychological well-being (Ryff & Singer, 1998), self-determination theory (Deci & Ryan, 2000), flourishing (Keyes, 2002), authentic happiness (Seligman, 2002), flow (Vittersø, 2003) and so on. Distinct factors like engagement, vitality, optimism, purpose and meaning, resilience, and accomplishment are also proposed in various frameworks of psychological well-being models (Huppert & So, 2013; Seligman et al., 2009; Waterman et al., 2010; Wietz et al., 2010). Most recently, beneficence has been proposed as a basic human need that could potentially assist people in living meaningful lives (Martela & Riekkari, 2018). Although the ambiguity of conceptualisation of well-being makes experimental results hard to be compared, it is important to remain open for researchers to think what constitutes well-being in their contexts.

Both hedonic and eudaimonic well-being have their own merits and demerits in representing well-being. Some models claim to have included both hedonic and eudaimonic elements to cover different perspectives. For example, PERMA model contains positive emotion, engagement, relationships, meaning, and accomplishments (Seligman, 2012). However, does combining two traditions mean that more nuances of well-being are captured or that well-being is better represented? For decades, researchers have often debated whether there is a meaningful distinction between hedonic and eudaimonic well-being. For example, the correlation between eudaimonia and hedonia ranges from -.3 to .8 across categories of analysis and levels of measurement (Waterman, 2008). In sum, the definitions of hedonistic and eudaimonic well-being are distinct, but the relationship between the two remains a

mystery (more literature on this is in appendix A). To expand the knowledge on this, this association was investigated in a Chinese sample as a side project to my PhD thesis. This article is also listed in the Appendix (see Appendix A).

2.1.3 Well-being in China

The concept of well-being in China. It is hard to separate “happiness” and “well-being” in Chinese well-being studies because the two words translate to the same term in Chinese-“幸福”. Considering the different philosophical stances behind two English words, this same translation in China has complicated and confounded theoretical discussions between cultures. Moreover, well-being in the North American context is defined by personal achievement and encourages people to maximize good feelings, but well-being in the Eastern context is defined by connections and encourages people to balance positive and negative consequences (Uchida & Kitayama, 2009). It appears that there might be significant differences between Western and Eastern conceptions of well-being. However, I contend that a cross-cultural investigation is indeed possible for following reasons.

First, although the nuanced understanding of well-being may differ in different contexts or cultures, the foundation of well-being in these two cultures might be more similar than we think. Confucius sighed in the countryside of the country of Lu more than 2,500 years ago, "If you hear the Tao in the morning, you can die at night." Tao is defined as a path or way of virtuous conduct that, if followed, leads to a life of harmony. According to Confucius, understanding the Tao was worth sacrificing his life for, according to his saying. Socrates inquired in Athens' central square more than 2,400 years ago, "What kind of life is worth living?" We can see that Chinese and ancient Greek thinkers thought in isomorphic ways over two thousand years ago to question the meaning of life. "Thinking about life" is a general reflection on one's own existence and the activities of groups in human society. It is not a distinct product of a culture, region, or philosophy to think of a good way to live a life. A more extensive comparison of Greek and Confucian philosophy can be found in the book-

The Ethics of Confucius and Aristotle, Mirrors of Virtue (Yu, 2007), where the author argues Confucius is far more like Aristotle than Socrates as they both agree that happiness comes through self-examination.

Second, well-being is not difficult for Chinese people to comprehend because eudaimonic and hedonistic pleasure are not a novel concept in Chinese culture. In fact, as Nussbaum (2000) noted in her book *Women and Human Development: The Capabilities Approach*, feminism, democracy, and other so-called "advanced" concepts were thought to have originated in the West. However, those concepts were also part of Indian culture if one had a thorough understanding of it. Similar to this, one might believe that reaching one's full potential is a concept imported from the West, but with indigenisation and decolonisation perspectives, one might spend time discovering that this concept is found in Chinese classics. The *I Ching*, also known as the *Book of Changes*, was written between 1000 and 750 BC. It states: " Just as the celestial bodies never run out of energy to orbit round and round, so should we always strive to better ourselves" (Legge, 1963). From this, self-actualisation and personal growth are not novel or imported ideas from civilisation. In addition, the recently identified pathway "benevolence" to obtain well-being (Martela & Riekk, 2018) closely coincides with "Ren," one of the major tenets of the Confucian culture (Rudebusch, 2013). Some excessive concerns about cross-cultural studies can occasionally be the result of ignorance of other foreign cultures.

Thirdly, despite determinists' claim that we cannot escape the hermeneutic cycle in order to truly understand the contextual terms of other countries (Taylor, 1985) and Wittgenstein's (1949) belief that an expression had meaning only in the context of one's own life, linguist Wierzbicka (1999) asserts that even the most culturally distinctive concepts can be reduced to simpler elements that can be understood by all people. Rather than relying solely on one's own understanding of well-being, the previous well-being concepts are well-structured with items to assess. Furthermore, the twenty-first century may be a unique time period for people from diverse cultures to share perceptions of what constitutes well-being and arrive at a mutual

understanding due to the increased communication of cultures, the rapid rise in multilingualism, and the knowledge exchange on the internet (This subject is also covered in greater detail in Appendix A). Thus, I believe those concepts can be studied cross-culturally by addressing the fundamental presumptions and philosophical underpinnings of psychological and subjective well-being.

In conclusion, the Chinese can comprehend both hedonic and eudaimonic conceptions of well-being². With a thorough review of well-being in both Western and Chinese backgrounds, it equips researchers with a better understanding of different research findings and greater confidence in studying well-being in China. The section that follows reviews the literature on academic accomplishment and peer relationships, two additional development goals for teenagers.

2.2 Academic Achievement

In 2015, the Organisation for Economic Co-operation and Development pointed out that "academic achievement that comes at the expense of students' well-being is not a full accomplishment." The relationship between academic achievement and student well-being has become an unavoidable question for researchers, educators, and policymakers to consider. *Academic achievement* in research refers to measurements such as test scores or course grades (Sirin, 2005), and has long been studied by researchers in both psychology and educational fields. It is crucial to the education system because not only does it demonstrate the intellectual growth of students, but it also has a substantial effect on their identities (e.g., Streitmatter, 1989). In addition, academic achievement is prioritized by schools to demonstrate their efficacy.

² It is worth noting that despite the fact that Chinese people may comprehend the structure of well-being as defined by Western tradition, culturally specific measurements are nevertheless required. This is outside the scope of this study and requires additional investigations.

2.2.1 Academic achievement in China

Numerous international studies, such as the Programme for International Student Assessment (PISA), have found that Chinese students outperform their peers from other countries in terms of academic achievement (Schleicher, 2019). This result has its own historical and contextual reasons. First, the culture of valuing education has been strongly rooted in the history of the Chinese imperial exam system since the Sui dynasty (581CE), when government officials were chosen based on merit rather than birth. This tradition continues to the present day; consequently, the education system is still viewed as a means to attain personal goals and improve the social and economic status of the family (Chen et al., 2000). Second, Chinese have a culturally specific term from the Confucian tradition that expresses one's love of learning. The Master said, "He who aims to be a man of complete virtue in his food does not seek to gratify his appetite, nor in his dwelling place does he seek the appliances of ease; he is earnest in what he is doing, and careful in his speech; he frequents the company of men of principle that he may be rectified—such a person may be said indeed to love to learn." ³ (Confucius & BookCaps, 2014). To some extent, this enthusiasm for learning contributes to the importance of academic success. As a result, academic achievement is both promoted in the Chinese school system, families, and ingrained in the minds of pupils.

In China, academic achievement is highly related to adolescent identities and social status. Students in China are under pressure to accomplish well on their assignments and exams because failing to do so might be regarded as abnormal (Wu & Tseng, 1993). Peer rejection of students who struggle academically is common in China (Chen et al., 1997), making it even more difficult for them to seek necessary

³ Another related quotes: "Love of goodness without love of learning degenerates into simple-mindedness. Love of knowledge without love of learning degenerates into utter lack of principle. Love of faithfulness without love of learning degenerates into injurious disregard of consequences. Love of uprightness without love of learning degenerates into harshness. Love of courage without love of learning degenerates into insubordination. Love of strong character without love of learning degenerates into mere recklessness."

help and support. On the other hand, academically competent students are recognized by their teachers and admired by their peers (Cillessen & Rose, 2005). Furthermore, academically capable adolescents are often perceived as smart and moral, making them more likely to be selected as leaders by their classmates and teachers. In short, academic achievement of Chinese students has a significant impact on their 's social status and social competence. With schools under pressure to improve their students' academic performance, understanding the relationship between academic achievement and well-being and devising a practical technique to improve both simultaneously becomes even more crucial. The following section further illustrates the current debate on the relationship between academic achievement and well-being.

2.2.1 Academic achievement and well-being

The relationship between academic achievement and well-being has been extensively studied in educational research. Quinn and Duckworth (2007), for example, conducted a one-year longitudinal study and discovered a positive reciprocal relationship between fifth-grade children's subjective well-being (SWB) and their school-recorded grades. A similar short-term longitudinal study (Ng et al., 2015) on teenagers found that academic success had a positive effect on their future SWB. Moreover, according to a qualitative survey, secondary school pupils consider academic performance as the most important indicator of their life satisfaction (Suldo et al., 2014). Thus far, the majority of studies examine the relationship between academic achievement and SWB among the student population, but the links between academic achievement and psychological well-being (PWB) are still relatively unexplored, even though academic achievement is more conceptually related to personal growth and competence ideas in psychological well-being.

The relationship between grade and well-being may be more closely associated in Chinese schools due to the high priority placed on academic accomplishment, but only a few studies have investigated this. A recent longitudinal study of Chinese primary school pupils discovered that academic achievement predicted later SWB

(Yang et al., 2019). Furthermore, a longitudinal relationship has also found in Chinese children, which suggests children who had lower academic attainment were more likely to score higher on depression and victimisation one year later (Yiu, 2020). Again, the relationship between academic achievement and psychological well-being has not yet been identified in Chinese samples. This is a crucial issue that must be addressed because it has the capacity to shape how politicians and administrators see these two factors.

However, some meta-analyses and systematic reviews indicate that the impact of well-being on academic achievement is less well-supported than policymakers believe; for example, high academic achievement does not guarantee high well-being (e.g., Amholt et al., 2020). Furthermore, some researchers argue that there may be a "trade-off" between well-being and academic achievement, and that schools and policymakers must decide which path to take (e.g., Heller-Sahlgren, 2018). However, an increasing number of scholars are criticizing this viewpoint, arguing that schools can have more than one goal and that the two can be strengthened in tandem (e.g., Clarke, 2020). The same perspective is held by this thesis, which intends to find a cost-effective way to improve students' academic performance and well-being at the same time (also see Section 2.6, Chapters 5, and 6).

In addition to academic achievement and well-being, developing social skills—also known as "soft skills"—is another crucial developmental goal for adolescents in schools (Wentzel, 1991) and meets with the “socialisation” goal of education that Biesta (2005) proposed (also see Section 7.4.1). Families and neighbourhoods are important settings for students to socialize (Bronfenbrenner, 1979), but this thesis focuses on the peer relationship context as it is the most significant setting for adolescents in schools (also see Chapter 1). The subsequent section discusses relevant and important peer relationship literature.

2.3 Peer Relationships

During adolescence, the amount of time adolescents spend with their parents

declines substantially, while they spend an increasing amount of time alone and with friends (Larson & Richards, 1991). As a result, one of the developmental goals for adolescents is to explore independence and develop a sense of self (Erikson, 1950). From research, *peer relationships* is one of the most significant contexts in developing social skills and gaining peer acceptance, which helps adolescents integrate self-perception images into a stable personal identity (Erikson, 1968; Ragelienė, 2016). Furthermore, motivated by theories and research linking negative peer relationships with later maladjustment, investigators have historically been interested in identifying the behavioural determinants of peer rejection as well as acceptance (Cillessen, 2011; Stormshak et al., 1999). This section begins with social behaviours (prosocial behaviour and aggressive behaviour) in peer interaction, and then moves on to social status.

2.3.1 Social emotional skills in peer relationship

Prosocial Behaviour. Fostering the social and emotional skills of adolescents within educational settings, alongside their academic skills, has been advocated and promoted by educators, practitioners, and several governments. The Collaborative for Social Emotional Learning (2015), known as CASEL, addresses five interrelated areas of social emotional skills: self-awareness, self-management, social awareness, relationship skills, and responsible decision-making. Relationship skills such as helping others are social competencies required for developing a positive peer relationship. *Prosocial behaviours* are a broad group of voluntarily performed actions that benefit others (Penner et al., 2005; Eisenberg et al., 2002). This topic has been historically studied by psychologists from various fields, including personality psychology, developmental psychology, and moral psychology (e.g., Eisenberg-Berg, 1981). Although interest in this issue waned at the turn of the century, there has been renewed interest in prosocial behaviour research in recent years, particularly because the social-emotional skill, a typical prosocial behaviour, was discovered to be an important developmental task in school life (Eisenberg et al., 2006).

Scholars in prosocial behaviour have reached a consensus on the typical prosocial behaviours. These types of prosocial behaviours, such as acting generously (sharing), helping and cooperating, showing consideration, and giving affection, are also consistent with the findings regarding toddlers, younger children, and younger adults (Eisenberg & Hand, 1979). Prosocial behaviour has been highlighted by researchers as a crucial feature that advances knowledge of teenagers' psychosocial development (Carlo et al., 2010). It is not surprising to see this capture attention in peer relation and well-being studies, as linking to Aristotle's happiness, this is a virtuous action which is observable in peer interaction. Based on the study that identified "benevolence" as a pathway to a meaningful life (Martela & Riekk, 2018), it is possible that students intuitively engage in prosocial behaviour to achieve a high level of well-being. More literature about prosocial behaviour and well-being is included in Section 2.4.

Aggressive Behaviours. Aggression can be categorized as follows: hostile aggression (i.e., forceful acts undertaken for their own sake) and instrumental aggression (i.e., the use of force to obtain a goal) (Hartup, 1974); proactive aggression (i.e., forceful acts that begin interactions) versus reactive aggression that includes forceful responses to provocations from others (e.g., Dodge & Coie, 1987); indirect (relational aggression, which involves social or peer relationship harm) and direct aggression (physical and verbal aggression) (Archer, 2004). This diversity of grouping has an impact on the statistical and theoretical significance of observed relationships between prosocial and aggressive behaviours (Hay et al., 2021).

For early development researchers, *aggressive behaviours* were considered as the opposite of prosocial behaviour because those two behaviours are two poles of one broader behaviour construct (Wispe, 1972; Caprara et al., 2006). Adolescents, particularly those in middle adolescence, are very open and susceptible to antisocial behaviour because they are motivated to explore different experiences through others in order to define their identities (Monahan, Steinberg, & Cauffman, 2009).

Aggressive behaviour is now receiving a lot more attention in adolescent development

studies because it potentially predicts negative adjustment in later years (Masten & Cicchetti, 2010).

However, researcher views on the value of aggression remains ambiguous. According to some researchers, aggression is a highly consistent and long-lasting habit, and the level of aggression in previous years can be used to forecast its growth to a significant extent (e.g., Liu, 2013). Others, however, believe that adolescent-specific aggressive behaviour is relatively common, temporary, and practically normative (e.g., Moffitt & Caspi, 2001). This topic is critical in education and psychology because it has the potential to affect the value of aggression among schools, which has a strong impact on teachers and students' attitudes (Zhang et al., 2018). Especially during early adolescence, peers are assumed to play a crucial role in the development of adolescent aggressive and prosocial behaviour, by constituting a powerful socialisation context in which they influence each other's behaviours (Veenstra & Dijkstra, 2011).

Resource Control Theory contends that prosocial behaviours and coercive behaviours are two evolutionary adaptations that are effective in securing and obtaining resources (Hawley, 2003) and result in a positive social outcome (Hawley, 2014). In this theory, aggressive behaviour may be used to obtain favour or high social standing by exhibiting authority or control. Moreover, according to Western peer ecology and evolutionary psychologists, a well-adjusted individual will display both prosocial and aggressive tendencies (Pellegrini, 2008, for a review). Teenagers are more likely to engage in both behaviours if linked to status in order to raise their own status (Dijkstra, Cillessen, Lindenberg, & Veenstra, 2010). As a result, these two types of behaviours and social status are frequently studied together. The following Section 2.3.2 unpacks social status in peer relationships, and Chapter 4 includes more literature on relationships between two types of behaviours and social status.

Cultural Considerations in Behaviours. The actual display of aggressive and prosocial behaviours depends on the extent to which the peer context motivates adolescents to do so and the cultural value behind this (Laninga-Wijnen et al., 2017).

In short, cultural differences have a profound impact on adolescents' behaviours (e.g., Hartl et al., 2000). In Chinese schools, the practices of confrontation and conflict are unwelcome, and the virtues of tenderness and kindness are more widely accepted in a collectivist school environment (Cowell et al., 2017). Classes on teaching virtues and moral education are common in Chinese schools to educate students to cooperate with their peers (Chen et al., 2006). Moreover, studies have found that cooperative behaviours are much more frequently seen in China than in the US, as Chinese peer relationships entail undertaking a large number of collaborative activities in the pursuit of group coherence (Chen & French, 2008). Since the value of collectivism is within the fabric of a social relationship itself, having a support system and acceptance from group members is vital to people from collectivistic countries. Thus, in Chinese schools, the behaviours that bring harmony and kindness to others would be highly recommended and being kind is a well-received norm in Chinese interpersonal relationships (Forbes et al., 2009). More literature about peer relationship in a Chinese school context can be found in Chapter 4.

2.3.2 Social status in peer relationships

This variable, *social status*, which depicts how students are perceived by their peers and reflects one's social value in relationships, was touched on briefly in the previous section. Youths favoured high social status in order to enhance their sense of self, as their peers viewed them as role models (Zhang et al., 2018). Two types of high social status in peer relationships, namely likeability and popularity, have recently attracted considerable attention due to their unique associations with prosocial and aggressive behaviours.

Likability and Popularity. Traditionally, researchers divided *popularity* into sociometric popularity and perceived popularity. Sociometric popularity reflects peer acceptance and social preference, which is usually associated with a peer nomination measurement to assess which youth are well-liked by their peers (Asher & Coie, 1990; Coie & Cillessen, 1993). Perceived popularity was used to describe youths who

are visible, prestigious, and dominant among their peer groups. The individuals in this group are not necessarily well-liked or favoured by their peers; they are a group of people well known and socially centred in their class (Cillessen & Rose, 2005; Laet et al., 2014; Zhang et al., 2018). Perceived popularity is commonly assessed by peer-nominated questions, such as "Who is the most popular kid in your class?" In recent decades, researchers have used "popularity" interchangeably with "perceived popularity". However, the pioneers in popularity research suggested discontinuing the usage of sociometric popularity and perceived popularity and replacing them with "*likability*" and "*popularity*" (Cillessen & Rose, 2005; Cillessen et al., 2011). To maintain greater clarity in the popularity research, the project will use the consistent, standardized terminology (likability and popularity) that previous researchers suggested.

Several articles explain that the transition to adolescence is a period when individuals increase their attention to improving and maintaining social status as the interactions between individuals become more complex (LaFontana & Cillessen, 2010; Rubin et al., 2007). Hence, the similarity between likeability and popularity fades when children become adolescents (Cillessen & Borch, 2006; Cillessen & Mayeux, 2004; Cillessen & Rose, 2005). In Western social status literature, likability has been found to have a positive relationship with prosocial behaviour and a negative association with aggression (Mayeux & Kraft, 2018). Additionally, research among Chinese and Western students demonstrates a positive relationship between prosocial behaviour and popularity (Niu et al., 2016; Cillessen & Borch, 2006 ; Cillessen & Mayeux, 2004 ; Wolters et al., 2014).

However, it is unclear how aggressive behaviour and social status relate. On the one hand, aggressive behaviour has historically been viewed as maladaptive (Findley & Ojanen, 2013), which makes young people who exhibit such behaviour less likeable. On the other hand, aggressive tendencies in some adolescents increase their visibility and influence in their classes (Cillessen & Mayeux, 2004). The relationships between aggression and social status as a whole are difficult to reconcile given that

popularity and likeability are two facets of social status. Thus, it is worth distinguishing between these two high-status profiles and studying them separately. Chapter 4 delves into the relationship between prosocial and aggressive behaviour and two types of social status.

2.4 Associations between Social Behaviours, Well-being, and Academic Achievement

Until now, well-being, academic achievement, and peer relationships have been discussed separately, with their one-to-one relationships briefly discussed and more literature about social status, well-being and academic achievement can be found in Chapter 4. Numerous studies have found that adolescent behaviours have substantial effects on academic performance, well-being, and long-term social-emotional adjustment (e.g., Jones, Brown, Hoglund, & Aber, 2010; Wentzel, Filisetti, & Looney, 2007). This section includes literature review about how prosocial and aggressive behaviour affect well-being and school success in different ways.

2.4.1 Prosocial behaviour linked with well-being and academic achievement

The positive correlation between prosocial behaviour and well-being is reliable and consistent across different types of prosocial behaviours and various kinds of well-being measurements, supported by significant volumes of empirical research (e.g., Schwartz et al., 2003). Students who engage in kind and helpful conduct are more likely to have better well-being and learning outcomes (Caprara et al., 2000). In a cross-cultural study, Akinin and his colleagues (2013) pointed out that people from different areas of the world generate similar positive emotions when they engage in financial-giving behaviour, such as buying gifts for a friend. It seems to imply that the positive relationship between prosocial behaviour and wellbeing is universal. Correspondingly, recent studies also proposed "benevolence" as a pathway to achieve well-being (Martela & Riekk, 2018).

The results from the neuroscience field might explain this association to some

extent. In a study published in *Nature*, researchers found that a top-down neural control directly linked a prosocial decision to an increase in happiness (Park et al., 2017). Thus, the happiness reward from performing prosocial behaviour might be genetically encoded and cross-cultural. Moreover, social science researchers add that fostering social relations might be another explanation for why engaging in prosocial behaviours could produce happiness (Diener & Seligman, 2002), since strong social relationships are important to maintaining well-being (Umberson et al., 1996). In all, Western researchers have generally agreed on the causal chain for conducting prosocial behaviour and improving well-being.

Researchers underline that understanding prosocial behaviour as an essential phenomenon can help with a better understanding of overall psychosocial development during adolescence (e.g., Carlo et al., 2010). According to research performed with pre-schoolers, being prosocial is more essential than doing well academically in school, since children would rather work with someone who is polite than someone who has excellent academic accomplishment but is mean to others. However, they also revealed that students intuitively believe that being nice and being smart go together, even though they understand that people can be intelligent yet mean (Heyman et al., 2003). Furthermore, research in both elementary and secondary schools has indicated that kids who exhibit more prosocial activities have greater levels of intellect, executive functions, and grade point average (GPA) (e.g., Galindo & Fuller, 2010). Thus, the ability to perform prosocial behaviour might be an observable factor of having better executive and intellectual development.

Some longitudinal research looking at the link between prosocial behaviour and academic achievement also backs up this idea. One empirical study, done among Italian teenagers, discovered that prosocial behaviour is the strongest predictor of academic performance five years later, even when the main academic grades are controlled for (Caprara et al., 2000). Similar findings have been reported in North American samples by Wentzel (1993) and Romano et al. (2010) as well. These findings, within different populations, are in accord with Bandura's (1999) and

Vygotsky's (1962) two major theories of learning behaviours, where they believe social interactions with peers provide an indispensable context for individuals to develop their skills in other domains. Prosocial behaviour promotes cognitive self-development by seeking academic assistance and direction from adults and classmates (Bandura, 1999). Recently, a theory of the developmental cascade model based on longitudinal studies found that positive adjustment in one area of competence can result in later success in another domain (Masten & Cicchetti, 2010). Moreover, prosocial students establish beneficial peer relations that facilitate their learning and well-being. All these findings and beliefs pointed to the fact that earlier prosocial acts would prepare the way for educational success and higher well-being in later years.

Although there is consensus in Western research about the positive associations between prosocial behaviour, well-being, and academic achievement, it is unclear whether the same findings hold true in a different cultural context. Based on the special interests of prosocial behaviour (see Section 2.3.1) in the Chinese education system, the link between prosocial behaviour and well-being as well as academic achievement might even be stronger. Chapter 4 contains additional literature pertaining to the situation in China. Furthermore, as adolescents engage in both prosocial and aggressive behaviour, the effects of engaging in aggressive behaviour on well-being and academic achievement must be included in the picture to fully comprehend their relationships.

2.4.2 Aggressive behaviour linked with well-being and academic achievement

Interestingly, fewer studies have looked into the direct link between aggressive behaviour and well-being. This might come from the intention of performing aggression, which could be controversial as it can be self-protective and destructive (Ferris & Grisso, 1998). On the one hand, there is no doubt that exposing or engaging in violent conduct has a detrimental impact on the well-being of victims, and even witnesses (Liu, Lewis, & Evans, 2013). On the other hand, researchers that use an evolutionary approach claim that aggressive behaviour can lead to social dominance,

which can result in better physical fitness, self-efficacy, and function (e.g., Pellegrini, 2008). Western research also indicated that pupils who engaged in both high prosocial and aggressive activities had the best social status and the lowest levels of negative emotions among their peers (Hartl et al., 2020). Specifically, prosocial activity enables this group of adolescents to develop and sustain social connections, which prevents and compensates for the negative results of the strategic use of instrumental violence to achieve dominance. These results indicate that although aggressive behaviour itself may lead to maladjustments in schools, but with some level of prosocial behaviour, the individual has the best social status. However, with different values placed on prosocial and aggressive behaviours, the outcome is not guaranteed in other cultures. Chapter 4 examines how different patterns of aggressive and prosocial behaviour influence the well-being and academic achievement of Chinese adolescents.

Studies consistently show that violence and other types of antisocial conduct have inverse associations with academic success and a wide range of undesirable behaviours have been connected to academic underachievement. A study conducted in a Western population using the developmental cascades model indicated that externalising problems evident at the start of the study undermined academic achievement by adolescence, which in turn led to internalising problems in young adulthood (Masten & Cicchetti, 2010). Although research consistently supports a cooccurrence between academic failure and problem behaviour, the field has yet to reach consensus about the precise cause of this relation (Algozzine et al., 2011).

Taken together, these two subsections argue that prosocial behaviour to some extent positively relates to well-being and academic achievement, whereas aggressive behaviour shows the different trend. Due to the fact that adolescents exhibit both aggressive and prosocial behaviours, it is insufficient to examine only one side of their behaviour. Therefore, a more in-depth examination of aggression and prosocial behaviours in relation to well-being and academic achievement is required in order to provide prospective guidelines for directing students' behaviours in schools. Section

3.1 elaborates on how to simultaneously analyse these variables. The literature in Chapter 4 is more specific regarding these connections in a Chinese context.

2.5 Summary and rationale for Study 1

In sum, existing literature shows the importance of well-being, academic achievement, and peer relation in adolescents' development, but the relation between these variables remains unclear. Research to date has tended to focus on one-to-one connections between one construct (e.g., prosocial behaviour) and its outcome (e.g., well-being). This traditional variable-centred approach, which is used in the majority of the mentioned literature, concentrates on patterns of operational factors among variables, or, in other words, variable interaction. From the literature, it appears that aggressive behaviour is negatively associated with well-being and academic achievement, while prosocial behaviour is positively associated with both. Nevertheless, adolescents display both aggressive and prosocial behaviours. So, this method fell short of providing a thorough analysis of these linkages.

However, in a person-centred approach, the individual or dyad is viewed as an organized whole. It takes a more holistic approach, focusing on the possibility that the sample under investigation may in fact represent numerous subpopulations, each with a unique configuration on the set of variables under consideration (Morin & Wang, 2016). Furthermore, it aids in identifying groups where the relationships between selected determinants and outcome variables are most pronounced. According to earlier research, Western youths could exhibit high levels of aggression and prosocial conduct and still have great psychological outcomes (Hartl et al., 2019). Thus, the first part of this project looks at the relationship between prosocial and aggressive behaviours with well-being and academic achievement within the context of peer relationship (likeability and popularity). More discussion can be found in Section 3.1 about the analytical approach of the thesis.

Finally, little research to date has examined the relationship between Chinese teenagers' well-being, academic achievement, and peer relationships. Prior research

has focused on samples of children and adolescents from Western nations, limiting the generalisation of findings to other cultural situations. This relation should be studied among Chinese adolescents so as to: 1) complete a more comprehensive picture of adolescent behaviour in the research field; and 2) validate existing Western implications before adopting them in Chinese research and schools. In sum, the first study will answer the research gaps which I have illustrated in this section:

- 1) Whether students in China can conduct both *high* aggressive and *high* prosocial behaviour?
- 2) From a person-centred perspective, what's the relationship between behaviour (prosocial vs aggressive), peer relations (likeability and popularity), academic, and well-being?
- 3) What types of students in terms of their behaviour and social status have the best well-being and academic outcomes?

A literature review of mindfulness-based intervention and its effects on well-being academic achievement and social behaviour

In this part of the literature review, I first present an overview of mindfulness-based intervention (MBI), including its definition, existing programs, effectiveness on well-being, academic achievement, and social behaviours, the issues with existing MBIs, and the methods utilized in investigating MBI, as well as demonstrating the possibilities of using MBI in China. It is then followed by a rationale for employing MBI in a Chinese middle school context and evaluating it through a mixed-method approach.

2.6 Mindfulness-based Intervention

Concerns regarding the well-being and mental health of adolescents have been highlighted by numerous Western and Eastern studies. In Section 2.1.1, the similarities, and differences between the conceptualisation of well-being and mental health in research were discussed. In short, well-being issues are attributed to the development of mental health issues, but one with mental health problem can still experience high well-being (Raviv et al., 2009). According to recent national Chinese research on mental health conducted by UNICEF (2019), about 25 percent of teenagers reported experiencing mild or severe depression. It is believed that at least 30 million Chinese children and adolescents under the age of 17 suffer from emotional or behavioural issues. With such a large percentage of students suffering from mental health symptoms, it is critical to discover practical strategies to assist them. The majority of mental health research, however, has been conducted in Western, educated, industrialised, rich, and democratic (WEIRD) countries, with little attention paid to the Chinese people (Henrich et al., 2010). Thus, fostering wellbeing and helping to ameliorate the symptoms of mental ill health are crucial in the Chinese setting, and further research is required.

As discussed in previous chapters, well-being, academic success, and social

skills are crucial developmental tasks for adolescents that should be emphasised or even thought of as default goals in the educational system (e.g., Clarke, 2020; Diamond, 2010). Moreover, developmental cascade theory illustrates the potential developmental relationship between social skills and academic ability. These theories demonstrate the possibility of enhancing these essential developmental tasks altogether. Connecting with the high rate of mental health and well-being issues among Chinese adolescents, practical solutions, such as school-based interventions, are required in addition to theoretical knowledge (also see introduction). Although serious mental health issues do necessitate clinical intervention, school-based interventions have shown their effectiveness in promoting wellbeing, mitigating mental health symptoms, and facilitating school-related developmental tasks (e.g., Gee et al., 2020) from the perspective of what schools and school teachers can do within their remit.

Many researchers have advocated for mindfulness as essential for daily well-being as it has a long-term positive impact on individual, interpersonal, and societal levels (Huppert et al., 2018). Although more research is needed to discover the best strategy for helping children develop their strengths, secular mindfulness-MBI, a positive psychology intervention, has drawn a lot of interest (Zenner et al., 2014). Mindfulness is prioritized because 1) it has the potential to increase mental health, well-being, academic achievement, behaviours, and social skills at the same time, all of which are factors of interest in the current research (also see Sections 2.6.2 and 2.6.3), and 2) it is suitable for Chinese adolescents and available for Chinese schools (see Section 2.6.6).

2.6.1 Definition and key concepts

The definition of *mindfulness* is consistent with, as Jon Kabat-Zinn puts it, "the awareness that emerges through paying attention on purpose, in the present moment, and nonjudgmentally to the unfolding of experience moment by moment" (Kabat-Zinn, 2003). Mindfulness meditation is a style of meditation that encourages people to

be aware of their feelings, thoughts, and surroundings without passing judgement (Zenner et al., 2014). The same applies to the main components of MBI, which are *awareness*, *presence*, and *non-judgment*. Moreover, researchers believe the main elements of MBI are not the structure of the intervention but the functions of the intervention (e.g., Renshaw, 2020), which are the action or skill of orienting one's attention to experiences in the here and now and the behaviour or skill of engaging in one's experiences in a welcoming and open way.

In fact, Buddhism and the Humanistic tradition had already laid the groundwork for the exponential rise in mindfulness interest before Kabat-Zinn's attempt (Dryden & Still, 2006). People increasingly accepted these traditions, which promoted a holistic view of human experience and emphasized non-judgmental acceptance, creating the foundation for further inclusion of mindfulness (Cevasco, 2017). But it is undeniable that Kabat-Zinn's integration of the practice into medical intervention in the late 20th century was one of the biggest influences to bring it from the East to the West recently. Furthermore, in 2003, a ground-breaking randomized controlled trial study discovered that 8 weeks of MBI improved participants' brain function and immune systems (Davidson et al., 2003), which was later corroborated by a meta-analysis (Greeson et al., 2014). Since then, a lot of attention has been focused on studying the effectiveness of MBI in the research field. To date, mindfulness has become an established component of several successful interventions addressing medical issues. It has formed various mindfulness-based psychological interventions with substantial support. Renshaw et al. (2021) recently concluded that "the eventual generalisation of mindfulness-based intervention (MBI) is an evidence-based practice for reducing suffering and promoting well-being with diverse individuals across a variety of service settings."

2.6.2 MBI and social emotional learning in schools

In Section 2.4, the significance of social behaviour in relation to well-being and academic accomplishment has been illustrated. *Social emotional learning* is the

process of acquiring the competencies to recognize and manage emotions; develop caring and concern for others; establish positive relationships; make responsible decisions and handle challenging situations effectively (Schonert-Reichl & O'Brien, 2012). Improving pupils' social emotional abilities allows children and adolescents to accurately perceive the behaviour of others, navigate social situations efficiently, and interact positively with peers (Jones et al., 2017). Moreover, academic learning accelerates when students have supportive relationships and the opportunity to develop and practice social, emotional, and cognitive abilities in a variety of contexts (CASEL, 2013). Thus, helping students to build and maintain peer relationships is critical to their success both mentally and academically.

Due to the effects of MBI on adolescents, schools are believed to be ideal settings for delivering such services to youth (Emerson et al., 2020). Mindfulness in schools has also received some government support, with funding allocated for its implementation. In the UK, for example, the Anna Freud National Centre for Children and Families put mindfulness projects into 370 schools between 2019 and 2021 to help improve the mental health of young people. The most recent meta-analysis of 66 randomized controlled trials (RCTs) involving 20,138 participants found that MBIs were effective in reducing anxiety and stress, negative and social behaviour, and improving attention and executive functioning when compared to passive control groups. When compared to active control groups, MBIs were found to be more effective in reducing anxiety and stress and improving mindfulness. However, no significant positive effects of MBIs were found in follow-up studies. Furthermore, universal MBIs resulted in small but significant improvement in attention, executive functioning and negative and social behaviour whereas selective MBIs were associated with anxiety/stress, depression, attention, executive functioning and mindfulness (Dunning et al., 2022). The universal approach is more relevant to the current study's interests in negative and social behaviour.

In school settings, one study systematically reviewed the implementation of MBIs delivered on children and adolescents and found that there was considerable

heterogeneity in the MBIs implemented, with a lack of clarity in the theoretical foundations and transparency regarding content and processes, such as a lack of consistent data on the dosage and effects of MBIs in schools (Emerson et al., 2020). The MYRIAD (My Resilience in Adolescence) Project is a significant study, being one of the largest clustered randomized controlled trials aimed at investigating the impact of a school-based MBI on the mental health of young teenagers (Kuyken et al., 2022). The results of the study over one year of follow-up did not find a better outcome from the school-based MBI when compared to social-emotional teaching as usual. Moreover, the results even showed slightly higher inattention and lower mindfulness in the trial group. The study was conducted in secondary schools in the UK where good SEL practice was considered an active control condition. However, the active control condition may vary in different settings, and thus the results of comparing MBIs to another group without prior SEL knowledge may differ.

Finally, some MBIs have integrated with school based Social and Emotional Learning (SEL) frameworks through multitiered systems of support (MTSS), which is a general school framework for organizing efficient and effective service delivery. According to Felver et al. (2013)'s review of the use of MBI in multi-tiered systems of support (MTSS), it was found that MBI can be used as a tier one prevention program (such as Learning to Breathe⁴) and that it can also be used as a tier two small group intervention (such as Mindfulness-based Cognitive Therapy) and a tier three intensive intervention for students with attention deficit hyperactivity disorder (e.g., Soles of the Feet). Furthermore, studies have shown that school based MBIs are able to improve core competencies of SEL such as self-awareness, social awareness, and relationship skills (Durlak et al., 2011). In sum,

⁴ Learning to Breathe is listed in Collaborative for Academic, Social, and Emotional Learning (CASEL)'s guide for effective SEL for secondary students.

MBI can be infused with existing SEL programs, demonstrating potential compatibility between the two to boost the effect of improving social-emotional skills (e.g., Zenner et al. 2014). The section that follows moves on to consider the effects of MBI on mental health, well-being, academic achievement, and peer relationships, which are also the key variables in Study One (Chapter 4).

2.6.3 The effect of MBIs on mental health, well-being, academic achievement, and prosocial and difficult behaviours

There is agreement on the relationships between MBI and mental health because it was initially intended to prevent depression relapse (Carsley, 2018). According to Section 2.1.1, mental health and well-being are two distinct but intertwined concepts, as the development of mental health issues may result in social or emotional challenges, which in turn impair students' well-being. Consequently, although the primary focus of this thesis is on well-being, the effect of MBIs on mental health is also a relevant aspect to examine. The majority of MBI studies concentrated on the effectiveness of reducing mental health-related symptoms like depression, anxiety, and stress. According to a recent meta-analysis of MBI effects in children and adolescents, MBIs reduce mood disturbance (depression, anxiety, and stress), negative behaviours, and troubling symptoms with effects ranging from mild to moderate (Dunning et al., 2019). In the same vein, the studies conducted in nonclinical settings prone to focus on the association between the MBI and one aspect of well-being, typically decreasing negative emotions (e.g., Singh & Sharma, 2016), which is only one dimension of subjective well-being identified in Chapter 2.1.2. Hence, more examinations are needed to look at the relationship between MBI and well-being as a whole instead of just assessing its negative sides or only mental health issues. Interestingly, gender differences were detected in responding to MBIs. One study found that girls who underwent MBI reported greater self-compassion than their counterparts in the control group, but no same effect was found among boys (Kang et al., 2018). The researchers suggest that MBI may be particular useful for improving

affect in girls.

According to multiple meta-analysis reviews, the effects of MBI on behaviour are positive; however, the association remains inconsistent between reviews (Renshaw et al., 2021). Inattention, aggression, and hyperactivity were also found to be sensitive to the effects of the MBIs (Schonert-Reichl et al., 2015). Furthermore, small to moderate impact sizes were discovered in influencing coping strategies and prosocial behaviour (Donald & Atkins, 2016; Tacón et al., 2003). Furthermore, the association between MBI and academic achievement is still ambiguous. Several studies have found that MBIs have small to moderate impact sizes on increasing academic success in school-aged students (Bennett & Dorjee, 2016; Zenner et al., 2014). Others, however, discovered no substantial improvement in academic achievement (Klingbeil et al., 2017; Maynard et al., 2017). Gao and his colleagues (2016) validated that mindfulness had a positive relationship with executive function and academic achievement in the Chinese population. So far, inconsistent findings have been found in the domain of MBI effects on prosocial behaviour, aggressive behaviour, and academic achievement, with some reviews showing nonsignificant results and others revealing tiny positive effects.

The following manuscripts (Chapters 5 and 6) provide a more in-depth literature review of the effects of certain MBIs on these variables, and Section 2.6.6 illustrates the effects of MBIs in the Chinese context.

2.6.4 The pitfalls of MBI

Albeit the evidently positive effects of mindfulness interventions, concerns around their safety issues and their potential adverse effects have been raised in both clinical and non-clinical forums (Wong et al., 2018). A few qualitative studies have indicated that mindfulness practices may cause a variety of issues, ranging from appetite loss to negative feelings to seizures (e.g., Shapiro, 1992; Jaseja, 2005; Lustyk et al., 2009). Moreover, a related survey discovered that 25.4% of its participants who practiced mindfulness daily admitted to experiencing unwanted

effects throughout their practices (Cebolla et al., 2017). Researchers also recognized and agreed that due to a lack of regular documentation on the negative impact in this field, only a few studies reported that unfavourable results might occur.

There is no doubt that individual differences could lead to different outcomes in practicing mindfulness. Mindfulness is not a panacea for all problems, and the existence of such a panacea is a myth. However, these unpleasant feelings found in previous studies may not be more harmful than their daily life experiences, as some researchers concluded that the majority of unwanted effects were transitory and would not lead to the consequence of quitting meditational practice (Cebolla et al., 2017). Furthermore, a meta-analysis study reviewed around 36 published randomized controlled trial studies which identified 7931 records and concluded that there was no significant difference between the reported adverse events in the intervention and the control groups (Wong et al., 2018). Aware of the potential side effects of MBI, Chapter 3 explains how this concern is addressed in this project, and a protocol for safety considerations is presented in Appendix D.

Moreover, Purser and Loy (2013) introduced the term "McMindfulness" to highlight the commercialisation of mindfulness, which they argue has led to the decontextualisation of mindfulness from its original purpose in ancient Indian Buddhism. Despite this criticism, MBIs, such as MBSR and MBCT may be favoured in the Chinese education system because religious content is typically excluded from the curriculum. This exclusion is particularly strict at primary and secondary levels, with the goal of promoting secularism and avoiding religious conflicts in schools (Zhao, 2018). Later, Purser (2019) has raised concerns about the potential for this decontextualisation to cause individuals to ignore civic responsibility. In fact, some MBIs, such as MindUp, include elements discussing how to teach students "as active participants in building that community fosters a sense of comfort, belonging, and optimism and increases their desire to make thoughtful, ethical decisions both independently and with others" (p.144). Nevertheless, the increasing popularity of mindfulness in commercial and industrial

sectors demands a need for further evidence to validate its effectiveness.

Mindfulness-based practices have gained attention in the field of mental health promotion in schools in the Western world, where the concept of school well-being has become a significant policy priority during the last decade (Schonert-Reichl & Roeser, 2016). In accordance with prior criticisms of mindfulness, Purser (2019) and Forbes (2019) bring the use of mindfulness in education into doubt. The instrumental nature of mindfulness interventions has also been critiqued for placing individual responsibility for mental health before addressing structural dynamics. Furthermore, according to Crane et al. (2017) and Gethin (2011), there is a lack of consensus on a definition of school-based mindfulness and what values and beliefs are promoted through mindfulness in schools. Like some experts in the field believe that "The enthusiasm for MBPs in youth has arguably run ahead of the evidence." (Dunning et al., 2022, p.135), more rigorous and large-scale studies are needed to evaluate the effectiveness and cost-effectiveness of MBIs for use in education and with adolescents. However, both Purser and Forbes believe school-based mindfulness has "the potential to promote forms of subjectivity that are to be considered beneficial" in education system (Primdahl, 2022, p122).

2.6.5 The mechanism of MBI

The different potential components have been proposed to describe the mechanism of mindfulness meditation by various researcher recent years. Baer (2003) summarised several mechanisms, including exposure, cognitive change, self-management, relaxation, and acceptance, that may explain how mindfulness skills might lead to symptom reduction and behaviour change. Later, the Five Facet Mindfulness Questionnaire (Baer et al., 2006) was developed through factor analysis of existing mindfulness questionnaires, and it includes the dimensions of observing, describing, acting with awareness, nonjudging of inner experience, and nonreactivity to inner experience. Moreover, from a behaviourist standpoint, Shapiro and colleagues (2006) claimed that three elements of IAA (Intention, Attention, and

Attitude) constitute the essential parts of mindfulness. The technique of intentionally focusing attention with openness and a non-judgmental attitude result in a shift in viewpoint, which has been dubbed "reperceiving" in the previous mentioned study. Moreover, this process of stepping outside of oneself has also been referred to as "decentering" (Safran & Segal, 1990), and it is strongly related to the concepts of "defusion" (Hayes, Strosahl, & Wilson, 1999), and "meta-cognitive awareness" (Teasdale et al., 2002).

Brown, Ryan, and Creswell (2007) reviewed the theoretical foundations of mindfulness and concluded that mechanisms of change encompass insight, exposure, nonattachment, enhanced mind-body functioning, and integrated functioning. 1) Insight is a decentred view of thoughts and feelings as insignificant and temporary. This awareness can help to reduce automatic thoughts, accept difficult emotions, test reality, and encourage better choices in behaviour. 2) Non-attachment entails accepting reality as it is rather than seeking to avoid, control, or gain personal well-being from changing circumstances or achieving goals. 3) Mind-body functioning is represented in mindfulness, which may have physical health benefits such as increasing immune function, fostering relaxation, and increasing pain tolerance. 4) Integrated functioning is defined as "all things considered," in which an awareness-based self directs experiences and behaviour. Later, a review from a neural perspective categorised the mechanisms of mindfulness meditation into attention regulation, body awareness, emotional regulation, and changes in perspective on the self. These mechanisms are linked to the anterior cingulate cortex, the insula, the prefrontal cortex, and the hippocampus (Hölzel et al., 2011). Despite ongoing discussion among neuroscientists, research has revealed that mindfulness is a combination of cognitive and emotional processes that might result in changes in behaviour, thought, and physiological functioning (Tang et al., 2015).

The previous premises of mindfulness were based on the quantitative analyses and expert opinions, but less is known about the experiences of those who have received mindfulness interventions. Qualitative research has been presented as

having the ability to unearth previously unknown elements of MBI's psychological effects or to identify the "active mindfulness component(s)" of these interventions (Grossman, 2019). Moreover, intervention mechanisms research can help therapists and program developers obtain clearer scientific knowledge of the processes that contribute to positive changes, in turn helping them to enhance the MBI's effectiveness and revise treatment manuals (Segal et al., 2013). Thus, a more thorough understanding of the mechanism underlying MBI is necessary for understanding behavioural change and contributing to future intervention development.

However, the majority of research studies on mindfulness through qualitative analysis, which followed the tradition of MBI studies, focused on clinical populations such as people with depression or on medical care. A pioneering qualitative study conducted on 17 nonclinical young adults developed an explanatory model of how adolescents understand their mindfulness experience (Monshat et al., 2013). The following potential mechanisms of behavioural change after MBIs were listed in this paper: 1) being able to attain a relaxed or peaceful state of mind. 2) able to create a sense of agency in specific situations and not be controlled by one's emotions. 3) able to shift in viewpoint or gain a higher awareness and acceptance of oneself and others, represented as a shift in perspective or a greater awareness and acceptance. These findings are in line with previous qualitative studies and mindfulness's theoretical premise in clinical populations. However, qualitative research on potential mechanisms in China is scarce compared to the Westernized settings. Less is therefore known about whether the MBI mechanism operates similarly across cultures. As a whole, intervention mechanisms research is required to further unpack the path of changes after MBIs in nonclinical Chinese adolescents in terms of how and why these changes occur, in order to comprehend the effects of MBIs on regular students, extend the theoretical understanding, and facilitate the development of further interventions.

2.6.6 Implementing MBI in Chinese schools

The tradition of MBIs is compatible with Chinese culture, and studies indicate that it could have positive effects on the Chinese people. As previously noted, the commercialisation of mindfulness has resulted in its detachment from its original roots in Indian Buddhism. However, in a cultural context like China, mindfulness may find greater relevance and acceptance as a practice. Most modern mindfulness-based interventions incorporate meditation techniques that originated in Chinese Taoist, Indian Buddhist, and Hindu traditions (Shear, 2006). Buddhism originated during the Han Dynasty (206 BCE-220 CE), and its principles of meditation and mindfulness have long been ingrained in Chinese culture and Confucian philosophy (Shear, 2006). For example, Neo-Confucian meditation practices, such as sitting in silence, have been practiced by Confucius' disciples for almost two hundred decades (Teng & Lien, 2016). Thus, with the proximity and innate understanding of Eastern culture, mindfulness principles, such as the MBIs' philosophy of respect, friendliness, and kindness, are not difficult for Chinese people to understand. Furthermore, these concepts originated within Chinese culture, allowing Chinese secondary school pupils to relate to them without difficulty.

The majority of MBI studies were conducted in the Western sample and in clinical trials, with less emphasis placed on the use of MBIs in nonclinical Chinese studies. Consistent with the findings of Schonert-Reichl and his colleagues in the West, Gao, and his colleagues (2016) demonstrated that mindfulness has a positive association with executive function and academic achievement in the Chinese population. Another preliminary study conducted in Hong Kong discovered an encouraging MBI outcome: a six-week MBI had a significantly positive impact on teens' personal growth dimension of psychological well-being (Lau & Hue, 2011).

Recently, an increasing number of studies have emphasized the importance of prosocial behaviour in schools as it can lead to more prosocial behaviour, establishing a benevolent cycle, and students tend to accomplish more in this

environment (Servátka, 2010). According to a meta-analysis, MBI has a medium-sized effect on improving prosocial behaviour. However, the link is stronger in adults than in adolescents (Donald et al., 2019). As engaging in collaborative activities is favourable for the pursuit of group coherence (Chen & French, 2008), prosocial behaviour is critical in Chinese schools since it is well-received and valued in Chinese culture. While the MYRIAD project results showed that a school-based MBI was not more effective than usual social-emotional learning courses that UK middle schools have, MBIs may be beneficial for the Chinese population given the familiarity of Buddhism.

A growing number of MBIs have been adopted into school settings. Programs such as MindUp, Mindfulness in Schools Program (MiSP), and Mindful Schools, are manualized, and strictly secular for easy use within schools. However, the recent implementation of MBIs in non-clinical settings, such as education, has been relatively slow. Crane and Kuyken (2012) concluded that this might be due to non-clinical settings' lacking resources for both training and personnel. First, these previously mentioned programmes rely greatly on well-trained practitioners. Second, a programme such as MiPS only accepts current teachers to be trained in their program. Third, the materials of the previous mentioned programmes are not freely accessible to general audiences, and they are available only for those who are taking training in their programs. A review of existing school based MBI can be found in Table 2.1.

Table 2.1 An overview of common MBIs used in middle schools.

Program	Target audience	Length	In Chinese	Instructor Requirements:
Mindfulness based stress reduction teens (MBSR-T)	adolescents	8 sessions, 90-minute each	None	Instructor with an in-depth 10-week training of the MBSR-T program

Mindfulness-based Cognitive Therapy (MBCT) book	Can be adapted to adolescents	8-week guidance	Yes	Can be self-practiced
MindUP	Teacher/school, parents	15 lessons	None	Trainers from the programme.
MiSP's .b	adolescents	8 weekly lessons (35–60 mins each)	None	School teachers who complete trainings
Learning to breathe	Adolescents	6 themes, could be delivered in 6, 12 or more sessions	None	Ready for practitioner to use, come with workbook pages.

collated from: scienceofmindfulness.org; mbct.com; mindup.org; mindfulnessinschools.org; learning2breathe.org.

The majority of Western studies using MBIs involved experienced practitioners who were embedded within the schools. However, the situation in mainland China might be different due to a lower awareness of the impact of MBIs and a lack of resources availability. The head teacher of a mindfulness research group at Peking University replied to my email, confirming that there are no trained mindfulness instructors who are certified to implement mindfulness in Chinese schools. Luckily, one study, supported by the National Science Foundation of China, suggested a brief director-free mindfulness intervention could help college students cope with their pain (Liu et al., 2013), which offers a direction to consider implementing MBIs without instructors. Moreover, a preliminary study used self-help Mindfulness-based Cognitive Therapy (MBCT) in Western adolescents and found improved wellbeing, self-compassion, and reduced negative emotions after its implementation (Taylor, Strauss, Cavanagh, & Jones, 2014). Hence, this method was considered as a potential intervention for the main study.

The origin of MBCT is that it was created to help individuals reduce stress and prevent depression patients from relapsing. It is so effective that it was recommended by the National Institute of Health and Care Excellence in 2004 as a preferred

treatment for depression. The techniques of MBCT comprise a series of mindfulness meditations and practices which could bring long-term changes to day-to-day emotions and behaviours (Williams & Penman, 2011). The MBCT self-help (MBCT-SH) book “Mindfulness: A practical guide to finding peace in a frantic world” by the same authors, was written based on MBCT, which was intentionally designed to help non-clinical audiences. MBCT-SH appeared as a preeminent choice since it does not rely on trained MBCT teachers. Wider resources, such as books, CDs, and apps for MBCT-SH, are easily accessible in bookstores and on phones in China. Therefore, mindfulness practices could be practiced by individuals, by themselves. Furthermore, given its nature of no demand for resources and personnel, it has a unique potential to scale up throughout China. Based on the presented research, this project examines whether this Eastern-born and Western-developed intervention can be widely used in the future within the Chinese secondary-school population.

2.7 Summary and rationale for Studies 2&3

In sum, MBI is recommended based on the literature as a potential tool to change mental health, well-being, prosocial and difficult behaviours, and academic achievement altogether to meet the schooling tasks for Chinese adolescents. Although extensive research has been carried out on topics relating to MBI, existing research has failed to provide enough empirical evidence to support MBI in a resource-scarce context. Therefore, three research gaps were identified through the literature:

- 1) The majority of MBI studies conduct research where personnel and programmes are available. However, not enough research looks at how to use MBI in resource-limited places.
- 2) Most MBI research focuses on patients or people with mental or physical health problems. However, there is a lack of studies looking at the effectiveness of MBI on the school-aged children in a non-Western context.
- 3) The majority of studies examine the impact of MBI on patient’s statistical

changes in terms of symptoms, but insufficient studies examine the common mechanisms underlying MBI's effectiveness in a non-Western context.

Thus, this project investigates whether this Eastern-born and Western-developed intervention could be widely deployed in the Chinese secondary-school population in the future. Furthermore, both teachers' opinions about this intervention and students' opinions on their changes were studied to test the premise of MBI mechanisms. More related literature reviews can be found in Chapters 5 and 6. The next section provides an overview of this thesis.

Chapter 3: Overview of the Thesis

There are both theoretical and practical gaps in the Chinese context when it comes to enhancing students' well-being, academic achievement, and social skills. Given these gaps, identified in the literature review, three empirical studies were conducted to 1) understand how the relationship between prosocial-aggressive behaviour, likeability-popularity, and well-being/academic achievement all work together in Chinese adolescents; 2) test the effectiveness of MBIs on Chinese adolescents; 3) explore the mechanism of MBIs in affecting students' behaviour. These studies are included in Chapters 4, 5, and 6, which will specify more relevant literature to address the research issues and detail the studies. This chapter provides an overview of three studies to assist readers in preparing for subsequent chapters and better understanding the relationships between the three studies. Figure 3.1 shows an overview of this thesis, and Table 3.1 summarises the three studies.

Figure 3.1 An overview of the thesis

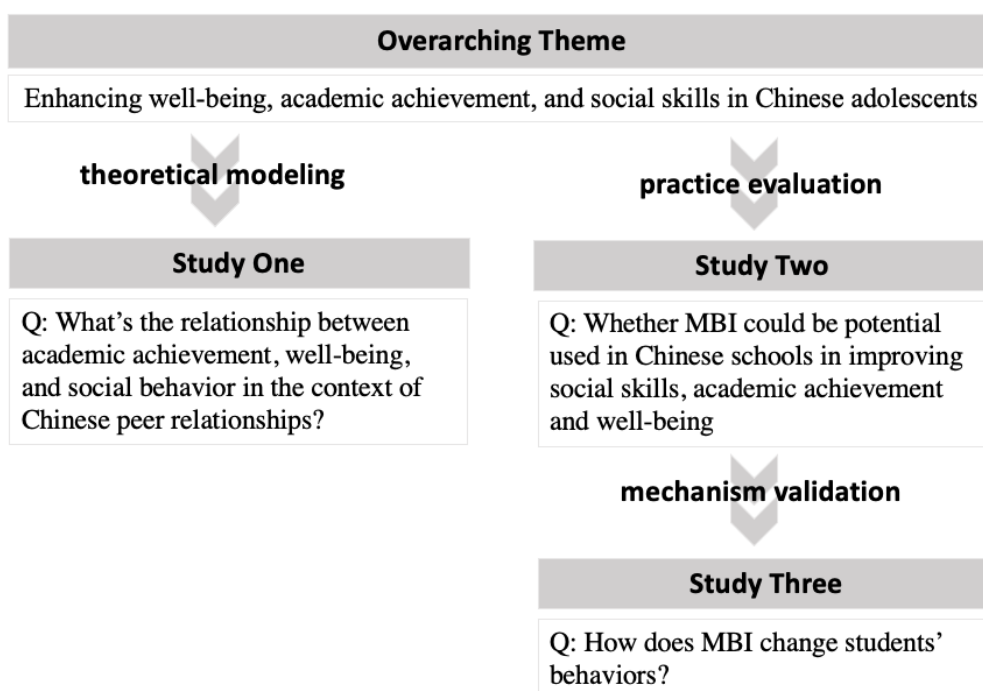


Table 3.1 A summary of current studies

Study	Research questions	Data (all primary)	Sample	Analysis	Variables
1	What's the relationship between academic achievement, well-being, and social behaviour in the context of Chinese peer relationships?	818 Chinese adolescence from two public schools and one private school in urban China.	Aged 12-15 years, 46% of girls	Quantitative: Latent profile analysis	Well-being Academic achievement Prosocial behaviour Aggressive behaviour Social status Demographic
2	A. Differential Effectiveness of Taught and Self-help Mindfulness-based Interventions in Chinese Adolescents B. What's the teachers' opinions about this intervention?	Quantitative: 515 students from a Chinese middle school. Taught MBI group (N=129), self-help MBI group (N=116), or control group (N=117) Qualitative: four head teachers from the taught MBI group	Aged 12-15, 47.5% girls	Quantitative: A repeated ANOVA and post hoc comparisons Qualitative: Thematic analysis	Well-being Depression, Anxiety and Stress ⁴ Loneliness Academic achievement Prosocial behaviour (SDQ) Aggressive behaviour (SDQ) Coping strategy
3	How does MBI change students' behaviours?	115 open-ended questionnaires and 4 focus group interviews	See 2	Qualitative: Thematic analysis	Topics: What has changed and how does it change?

⁴ In this study, the Depression, Anxiety, and Stress Scale (DASS-21) was employed to assess mental health because MBI was originally designed for this purpose. Furthermore, decreased negative emotion is one facet of subjective well-being, hence it is related to the well-being theme (also see Section 2.6.3).

3.1 The Analytical Approach of Three Studies

The thesis attempts to clarify the relationship between interrelated variables (social skills, academic achievement and well-being); the second part of the thesis is to examine whether those elements could be improved together through MBI. As shown in Table 3.1, both qualitative and quantitative methods were adopted to address research questions. Mixed methods research (MMR) has been described as the third research paradigm that combines both qualitative and quantitative research methods, which is believed to be one of the best methods for research that has multiple questions (Johnson, Onwuegbuzie, & Turner, 2007). This thesis follows mixed methods research, which emphasizes the matching of research questions to a set of methods to address research questions in a meaningful way.

Thus, both advanced quantitative and qualitative approaches were adopted for the various stages of research. The first study in this thesis uses advanced quantitative methods to unpack the interrelated relationships between well-being, academic achievement, and peer relationships. The inconsistency of findings from the variable-centred studies fails to provide a clear picture of the relationship between these variables. Hence, a person-centred and state-of-the-art method - latent variable analysis study (LPA) - was introduced. Traditional variable-centred studies focus on understanding relations between variables, whereas a person-centred approach could categorize population into different subgroups based on a unique pattern on the set of variables under consideration and further evaluate the relationships between different groups and outcome variables (Bergman & Magnusson, 1997; Morin & Wang, 2016; also see Section 2.5). This holistic approach could potentially disentangle the interconnected characteristics of an individual. Analyses were performed in Mplus (Muthén & Muthén, 1998–2017) using estimation methods that are robust against deviations from the normality assumption. More information about LPA will be illustrated in Chapter 4 (also see Section 2.5).

The second part of the thesis includes both confirmatory and exploratory questions. To address these questions, this part uses an experimental design and analyses the data through pre-post *t* tests and thematic analysis: 1) the quantitative data was used to provide a statistical reference on whether MBI could benefit Chinese secondary schoolers in nurturing their social skills, well-being, and academic achievement; 2) the qualitative data was treated to explore participants' and teachers' comments and feelings in more depth, and potentially give

researchers' indications on better understanding the implementation and mechanism of MBI. The material used in MBI courses, such as PowerPoint slides, handouts, and booklets, is included in Appendix B. More information is included in Chapters 5 and 6.

3.2 Overall Ethical Considerations

All three studies had received institutional ethical approval and followed the British Educational Research Association (BERA) guidelines. Permission was secured from school administration, and informed consent was gained directly from students (see Appendix C). All documents used in these studies were translated into Chinese to ensure that the contents were understood by teachers and participants. The names of the children were not used at any point and all information was treated confidentially and stored securely. By not submitting their questionnaires, students have the option to decline the sharing of their data.

One further ethical issue that has been addressed is that there is no professional registration required to teach MBI and no authorized body to regulate the training in this field (Farias & Wikholm, 2016). The second part of the project was to determine whether MBI could be employed in a resource-constrained setting. Thus, despite not being in possession of an MBI teaching certificate, I taught courses according to the MBI manual. In order to minimize the potential negative feelings, the slides and content (see Appendix B) were evaluated by teachers and professionals prior to the project to ensure that the courses were appropriate for pupils. Moreover, the study followed Mindfulness-Based Interventions: Teaching Assessment Criteria (MBI: TAC) (Crane et al., 2013) to guide the teaching process during the sessions. Finally, I have received training in mental health counselling for my master's study and have the Youth Mental Health First Aid USA certificate, and a protocol for emergencies is included prior to the project (see Appendix D).

3.3 Positionality

I was born and raised in China and later pursued higher education in psychology, mental health counselling, and education in the United States and later in the United Kingdom. Through my exposure to both Chinese and Western education systems and cultural differences, I have developed a strong concern for the non-academic aspects of contemporary education. I believe that mainstream education in both Western and Chinese

contexts prioritise the knowledge acquisition instead there is a lack of emphasis on creating well-rounded individuals and addressing their *holistic* development.

My thesis reflects these beliefs and aims to advocate for a more *holistic* approach to education, incorporating aspects such as mindfulness and social-emotional learning to promote both academic achievement, well-being, and social emotional skills. While I do not view mindfulness as a panacea, I recognise its potential to provide students with a more embodied experience of their thoughts, emotions, bodies, and the world. As someone who has not integrated mindfulness into my daily routine, I approach this topic with an open mind and a desire to understand its potential impact on education.

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Chapter 4: Social Status-Behaviour Profiles and Their Relationships to Academic Achievement and Well-being (Study One)

This Chapter contains the paper “Examining Social Status Profiles with Gender, School Attended, SES, Academic Achievement and Wellbeing in Urban China” which has been published in *Journal of Youth and Adolescents*.

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Abstract

Previous research has produced inconsistent findings about the relationships between aggressive and prosocial behaviour with likeability and popularity. This study utilized latent profile analysis to identify naturally occurring social status profiles with these indicators and to further explore their associations with gender, school attended, subjective social status, academic achievement, and wellbeing. The study recruited 818 (aged 12-15 years, 46% girls) Chinese youth and revealed high aggressive-low likeability, low social status, average, and high prosocial-high social status groups. A bi-strategic profile did not emerge. The low social status and high aggressive groups exhibited the lowest academic achievement and wellbeing, suggesting that more attention should be devoted to these students both in school and in future research.

Keywords:

Resource control theory; Social status; Latent profile analysis; Prosocial behaviour; Adolescence; Wellbeing

Examining Social Status Profiles with Gender, School Attended, SES, Academic Achievement and Wellbeing in Urban China

Introduction

Adolescents are most concerned about their peer social status during their crucial but sensitive middle school years where more complex social interactions occur in schools, but parental supervision is decreased (LaFontana & Cillessen, 2010). Some peer ecology and evolutionary-oriented researchers argue that prosocial and aggressive behaviours are two strategies, playing similar functional roles in social dominance, to accumulate social status and both can be exhibited by a well-adjusted individual (for a review see Pellegrini, 2008). However, whether this so called bi-strategic group naturally occurs has not yet been established empirically, let alone whether such individuals are well-adjusted, as studies conducted in different countries have produced inconsistent findings (Berger, Batanova, & Cance, 2015; Hartl, Laursen, Cantin, & Vitaro, 2020). Moreover, due to the heterogeneous nature of individual behaviour and social status (Eye & Bogat, 2006), variable-oriented studies have not come to a clear conclusion about relationships between prosocial behaviour, aggressive behaviour, and social status (Lu et al., 2018). With a cultural-contextual concern, this study was designed to confirm natural configurations of social status groups, in particular to establish the existence of a bi-strategic group, and to explore status group associations with gender, school attended, subjective socioeconomic status, wellbeing, and academic outcomes, by deploying a person-centred analysis in a large sample of Chinese adolescents.

Resource Control Theory in the Chinese Context

In Western literature, researchers have already concurred that popular adolescents use both prosocial and aggressive behaviours to obtain and maintain their popularity (Cillessen, 2011); however, results in the Chinese context are less consistent. Some researchers have found that popular Chinese students have similar patterns of aggressive and prosocial behaviours as their Western peers (Lu, Jin, Li, Niu, Chen &

French, 2018; Lu, Li, Niu, Jin & French, 2018). However, others do not (Li et al., 2012; Owens, Feng, & Xi, 2014). Thus, by shifting from a variable-oriented approach, a person-centred approach may explain whether these two types of behaviours could co-occur.

Resource Control Theory contends that prosocial behaviours and coercive behaviours are two evolutionary adaptations that are effective in securing and obtaining resources (Hawley, 2003). Considered as two functional strategies for social control, these two behaviours are believed to be socially adaptive and result in a positive social outcome (Hawley, 2014). Resource control theory classifies individuals into five groups: prosocial controllers, coercive controllers, bi-strategic controllers, non-controllers, and typical controllers, based on the distribution of self-reported behavioural strategies. In particular, the bi-strategic group has been found to score highly on prosocial and aggressive behaviours but enjoy a high social status in Western samples (Reijntjes et al., 2018).

A Chinese study, utilizing the same identification method as studies above, testified the existence of bi-strategic controllers in a non-Western sample but discovered that Chinese children in this group displayed poorer social functioning and lower peer status compared with their peers (Chen & Chang, 2012), which contrasts the assumptions and studies in Western contexts. The categorisation technique in the mentioned studies is based on a predetermined classification criterion of responses to locate participants into discrete groups. Although this method is person-oriented, it has been pointed out that this lacks the statistical ability to capture naturally existing profiles that do not correspond to the predetermined statistical criteria (Berger et al., 2015; Hartl et al., 2020). Thus, the current study adopted latent profile analysis which is a more advanced technique to avoid such methodological artefacts.

A few previous studies have used latent profile analysis to examine the natural occurrence of a distinct bi-strategic popular youth group; however, the outcomes are contradictory. A longitudinal study using aggressive and prosocial behaviour, and popularity as social status indicators was able to identify this specific group in a

Canadian student sample (Hartl et al., 2020). The bi-strategic popular group in this sample had the highest popularity, whereas the aggressive and prosocial popular groups had a similar level of popularity, and the average group had the lowest popularity. Moreover, the bi-strategic group and the prosocial popular group had the highest peer acceptance and lowest loneliness. However, another cross-sectional study using aggressive and prosocial behaviour, social status, and other socio-emotional indicators (e.g., perspective-taking, empathy) failed to confirm this group. A normative group, a high prosocial group, and a high aggressive group were detected; the aggressive group displayed the highest popularity, and the prosocial group showed the highest likeability (Berger et al., 2015). Researchers believed the reason for the contradiction was that the latter study featured a broader array of indicators, which in turn exposed different profiles (Hartl et al., 2020). For this reason, the current study narrowed the range of indicators focusing on resource control elements, which only identify prosocial behaviour, aggressive behaviour, likeability, and popularity, to test if these two sets of behaviours could co-exist in a social status profile.

Beyond different indicator choices, cultural difference could be another factor impacting the aforementioned inconsistent findings since the functional meanings and outcomes of different behavioural patterns are profoundly impacted by cultural context (Chen & French, 2008). Practices of aggression and conflict are unwelcome, and the virtues of tenderness and kindness are more widely accepted in a collectivist environment (Cowell et al., 2017). Further, in Chinese schools, moral education is emphasized teaching students to maintain harmony in classes and be altruistic toward others (Chen et al., 2000). Such culturally endorsed values signify that Chinese-identified profiles and the outcomes of profiles might differ from those in Western domains. Accordingly, the current study had an aim to ascertain whether the bi-strategic group naturally exists in a collectivist cultural context and, if so, whether the outcomes are adaptive as proposed in resource control theory.

The Indicators of Social Status Profiles

In previous decades, two indicators of social status, namely social preference

(likeability) and perceived popularity (popularity), were traditionally used to distinguish two types of social status in peer relationships (Cillessen, 2011). However, researchers use different words (e.g., sociometric popularity, perceived popularity, popular, or social status) interchangeably, meaning studies on this topic are hard to clarify and compare (Cillessen & Rose, 2005). To maintain greater clarity, this study applied likeability to reflect peer acceptance and social preference, while popularity was adopted to describe youth who are visible, prestigious, and dominant among their peer groups. Furthermore, social status in this paper is used as an umbrella term to encompass both types of indicators (likeability and popularity).

The relationship between aggressive behaviour and social status is currently unclear. On the one hand, aggressive behaviours are historically seen as maladaptive (Findley & Ojanen, 2013), which leads to young people demonstrating such behaviours having low likeability. On the other hand, aggressive behaviours make certain young people more visible and more potent in their classes (Cillessen & Mayeux, 2004). Given likeability and popularity are two aspects of social status, the relations between aggression and social status as a whole are hard to reconcile. This complicated relationship necessitated the separation of social status into two dimensions (likeability and popularity) in this study. Aggression comprises indirect aggression and direct aggression (physical and verbal aggression). Indirect aggression also refers to relational aggression which involves social or peer relation harm. Physical aggression describes actual physical harm, and verbal aggression refers to verbal confrontations or making fun of others (Archer, 2004). Moreover, aggressive behaviour has been discovered to be negatively associated with academic achievement and wellbeing (Rodkin, Farmer, Pearl, & Van Acker, 2000). As the two types of aggression display significant gender differences (Forbes et al., 2009), the current study used both physical and relational aggression as profile indicators.

Empirical studies involving both Chinese and Western students tend to reach the same conclusion that prosocial behaviours are positively associated with both likeability and popularity. Prosocial behaviours which are defined as voluntary and

beneficial actions to others are universally welcomed in school settings. In contrast to aggressive students, students who engage in kind and assisting conduct are more likely to have better wellbeing and learning outcomes (Caprara et al., 2000).

Additionally, cooperation behaviours are much frequently seen in China than in the US as Chinese peer relationships entail undertaking a large number of collaborative activities in the pursuit of group coherence (Chen & French, 2008). Thus, the current study included two forms of prosocial behaviour, cooperation and helping behaviour, as profile indicators. Taken together, the following six indicators were used in the identification of profiles: help, cooperation, relational aggression, physical aggression, likeability, and popularity.

Self-perceived Socioeconomic Status, School Types, and Gender

Several studies have shown that a lack of socioeconomic resources predicts a lower level of social competence and emotional wellbeing, and a high level of social and behavioural difficulties in schools (Bierman et al., 2008). As the perception of socioeconomic status is more important than reality in predicting quality of life (Netuveli & Bartley, 2012), Subjective Social Status (SSS), which captures a person's sense of place within a hierarchy (Adler & Stewart, 2007), was used in the current study to examine whether students' perception of their socioeconomic status predicts their profile memberships. To date, very few studies have looked at the impact of school types (public vs private) in China. In general, students who attend fee-paying private schools have higher socioeconomic background than students in public schools (Shi et al., 2017). Private schools usually have smaller class sizes and better teachers and facility resources which may create a different class culture including peer relationships compared to public schools (Wen et al., 2008). Thus, the current study also examined school type on the membership of social status profiles. Regarding gender, both variable-centred studies and person-centred studies concur that boys are more likely to conduct aggressive behaviours than girls (Salmivalli & Kaukiainen, 2004). Findings from two latent profile analysis studies are consistent;

boys are more likely to be in the aggressive popular group and girls are more likely in the prosocial popular group (Berger et al., 2015; Hartl et al., 2020). Thus, the current study also tested the extent to which gender is associated with the membership of social status profiles.

Academic Achievement and Wellbeing

A Chinese study has found academic achievement was positively associated with both likeability and popularity (Niu et al., 2016), while Western studies claimed no relationship as such (Meijs et al., 2010). The inconsistent results may be explained by the norms of academic achievement in different countries (Niu et al., 2016); academic high achievers in Western culture may be treated as “nerds” or “outliers” in their classes (Li, 2007), whereas given that there is a strong academic-centred orientation in Chinese schools (Hau & Ho, 2010), this type of student is normally favoured by peers. Further, students with better scores are more likely to be assigned leadership positions and be expected to offer academic support to classmates (Li, Xie, & Shi, 2012). One empirical study found the level of prosocial behaviour is the prime predictor of academic achievement five years later, even when controlling for primary academic grades (Caprara et al., 2000). The current study thus examined the relationship between membership of social status profiles and academic achievement.

To better facilitate different social status groups, it is crucial to gauge the impact of different social status groups’ memberships on the wellbeing of students. Neuroscientists found that a top-down neural control directly linked a prosocial decision to an increase in happiness (Park et al., 2017). Moreover, social science researchers noted that fostering social relations might be another explanation for why engaging in prosocial behaviours could produce wellbeing (Diener & Seligman, 2002), since a strong social relationship is a vital element to maintain wellbeing. Little is known about the relationship between social status and wellbeing, with only one correlational study directly investigating this and finding that the relationship between social status and social contentment is non-linear (Ferguson & Ryan, 2019). A

previous study utilizing clustering analysis found prosocial groups displayed the lowest level of anger and disruptiveness (Hartl et al., 2020), but no prior studies have looked at each group's wellbeing or academic achievement. Thus, this study assesses academic achievement and psychological wellbeing and investigates their relationships with social status profile membership.

Current Study

Building on previous research, the present study shifted from examining relationships between behaviour and social status through a variable-centred approach to understanding how these intercorrelated variables are displayed in different people. The first goal of the current investigation was to identify social status profiles among Chinese adolescents based on the narratives of resource control theory (prosocial behaviours, aggressive behaviours, popularity, and likeability); and specifically, to investigate whether a bi-strategic group exists. Based on the literature and taking cultural aspects into consideration, a high prosocial social status group with high prosocial behaviour and high social status, and an average group with some social statuses were expected. However, the bi-strategic group was not expected to appear in Chinese adolescents. Last, it was hypothesized that there would be an aggressive group exhibiting low likeability, but their popularity level could not be predicted. Further, relatively little attention has been given to the prognostic factors and the implications of being in the different social status profiles. Thus, a unique feature of the current study was to examine how these different profiles relate to gender, school attended, self-perceived SES, academic achievement, and wellbeing in a Chinese middle school context. It was anticipated boys would be more likely to fall in the aggressive popular group; Students having high subjective social status would have higher chances of being in the prosocial social status group. Moreover, students from the prosocial group would have higher levels of academic achievement and wellbeing, in contrast, the aggressive group was expected to have a low-level of academic performance and wellbeing.

Method

Participants

Participants were 901 middle schoolers recruited from three middle schools, two of which were public schools and the third a private school, in an urban area in China. There are no nationally used indicators of either individual or school level socio-economic status such as percentage eligible for free school meals which are commonly used in Western studies. Thus, a private school, where tuition fees are levied, was included to increase sample diversity. The data was collected during the first semester of the 2019 academic year. Eighty-three students were excluded from the main analysis because they had chosen not to be included or admitted giving careless responses. Therefore, the final data contained 818 (45.9% girls) eighth graders, which ranged in age from 12 to 15 years ($M = 13.39$, $SD = .54$). Age differences vary due to different admission ages, repeating or skipping a grade, or other reasons of delay.

This study had received institutional ethical approval and followed the British Educational Research Association (BERA) guidelines. Permission was obtained from the school administration in the first instance, who then informed parents about the study. Assent was obtained from the students themselves. Written and verbal instructions informed participants that their answers would remain confidential and that they could withdraw from the study at any time. The students were asked to complete the survey during their mental health classes, which lasted about 45 mins. Records of grades were requested directly from teachers after the data collection. The data collection period was from October to November, which coincided with the timing of mid-term exams.

Measures

Peer nomination

Peer nomination procedures followed standard approaches to assessing prosocial-ness, aggression, and social status among Chinese middle schoolers (Cillessen & Mayeux, 2004); each area was assessed using two questions, totalling six

altogether. The order of these six peer-nominated questions was randomized. Each participant was given a roster of all classmates' names with code numbers and were asked to write down all the names of all the students they felt fitted the given description. The study contends that peers could give accurate judgments based on their classmates' overall manners because they stay in the same administrative classes for three years (Niu et al., 2016). Empirical studies suggest that when unlimited nomination procedures are used, and the response rate for nominations is greater than 60%, the internal consistency will significantly increase (Marks et al., 2013). In this study, self-nominations were removed when calculating the scores, and unlimited nominations for each item were allowed. The participation rates in different classes ranged from 73.5%-97.9%. The participant's score for each question was calculated as the number of nominations a participant received over the total number of participants in each class, and then the scores were z-standardized for further comparison. This ensured that differences in class size would not affect the proportion of nominations a student received.

Prosocial behaviour

Participants were asked to nominate two prosocial descriptors separately: "someone who follows the rules and cooperates with others" and "someone willing to help others when they need it". These two items are originally from the Revised Class Play scale (Masten et al., 1985), and have been successfully translated for use with Chinese adolescents (Chen et al., 2000); both studies demonstrated good reliability of the two subscales ($\alpha = .89 - .92$).

Aggressive behaviour

Aggressive behaviour was measured using two aspects – physical aggression (kicks, pushes, or hurts others) and relational aggression (tells lies or spreads false rumours about others) – which were also modified from the Revised Class Play (Masten et al., 1985). Aggressive indicators have also been widely used in a Chinese context and demonstrated good reliability respectively ($\alpha = .94-.96$) (Tseng et al.,

2013).

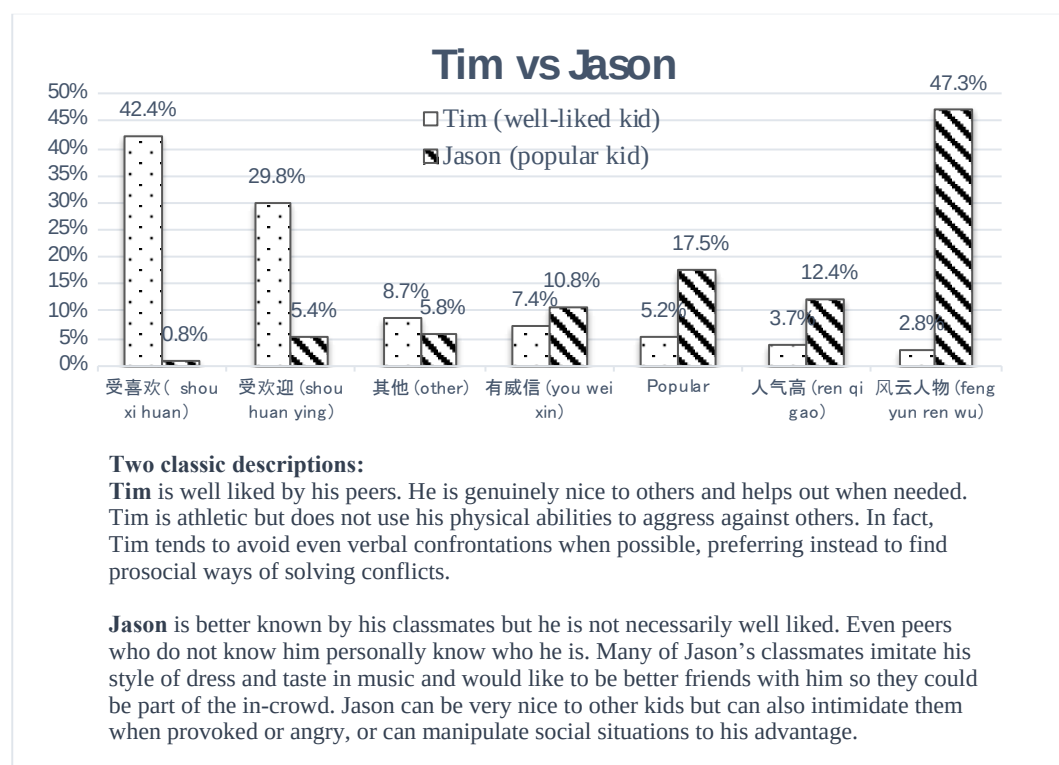
Social status

Participants' popularity and likeability were utilized to assess participants' social status, with participants being asked to nominate students in line with two standard statements: "the students who are the most popular in your class" and "the students you like the most in your class" (Cillessen & Mayeux, 2004). A previous study found the two items were highly correlated in Chinese youth ($r = .75$) (Zhang et al., 2018) and similar in the current study ($r = .63$).

Given inconsistent translation of the term "perceived popularity" in Chinese literature, a pilot study was carried out before the main study to determine the most appropriate translation. First of all, with the assistance of several bilingual speakers and based on existing literature (see below), six commonly used translations of popular were identified (see Figure 1). Next, two classic descriptions of being liked (Tim) and being popular (Jason), as shown in Figure 4.1, were adopted from an existing study (Cillessen & Rose, 2005). These descriptions were subsequently presented to participants alongside the six commonly used translations for popular. Participants were asked to choose which of the translations firstly best described Tim and secondly best described Jason. Participants were a convenience sample of Chinese students studying in the UK recruited via social media ($N=248$). Ten participants were excluded due to inattentive answers. "Ren qi gao" and "feng yun ren wu" are two recommended translations to supplement the conventional translation of popularity "shou huan ying" (Niu et al., 2016). From the results, it is clear that "shou huan ying" should not be used as a golden standard translation of popularity since the meaning of it overlapped with likability to a great extent, as "shou huan ying" was also the second top choice (29.8%) to describe the well-liked kid. And "feng yun ren wu" is superior to "ren qi gao" as a translation of popular, not only because it was identified by almost half the sample (47.3%) but also because it separates itself to a great extent from likeability as only 2.8% of participants indicated this best described

Tim. This finding, while preliminary, suggests “shou xi huan” and “feng yun ren wu” may best capture the nuanced meaning of being liked and being popular and discriminating between them.

Figure 4.1 Outcomes of preferred translations for the descriptions of Tim and Jason



Self-perceived socioeconomic status

The current study adopted a youth-suitable version of the MacArthur Scale of Subjective Social Status (MacArthur SSS Scale), which has good reliability and validity in measuring an individual’s perception of their socio-economic status (Goodman, 2001). The scale presented a ten-rung ladder on which participants were asked to rank their family’s Socioeconomic level, corresponding to the numbered box within the ladder. This measurement has a significant test-retest reliability as .62 (Operario et al., 2004) and had been used previously on the Chinese population (Hu et al., 2005).

Academic achievement

Chinese, Mathematics, English, and Science are the four core subjects in Chinese

schools across all provinces, thus these were used collectively to assess academic achievement, as this a better indicator than a one-subject statistic (Sirin, 2005). Scores were derived from the latest midterm exams with higher scores indicating better grades. Raw scores in each core subject were standardized within each class for comparability as each school has its own scoring system, and the students' final academic achievement score was their summated standardized scores across the four subjects.

Psychological wellbeing

The psychological wellbeing of participants was assessed using the Flourishing Scale (Diener et al., 2009). This measure comprises eight items (e.g., "I am optimistic about my future", "I lead a purposeful and meaningful life"), each of which is rated on a seven-point Likert scale varying from 1 ('strongly disagree') to 7 ('strongly agree'). A high score indicates that a person has higher psychological wellbeing and strengths. This scale has been validated in Chinese adolescents and demonstrated a high internal consistency ($\alpha = .83$) (Duan & Xie, 2019).

Analytical Strategy

Missing data

A range of .2% to .7% of reports was missing. Little's MCAR test revealed that the missing data was completely missing at random ($\chi^2(105) = 118.45, p = .17$). Missing values in SPSS were replaced with multiple imputations using an EM algorithm. Missing values in Mplus were addressed by the Full Information Maximum Likelihood (FIML), using all available data to maximize the information.

Latent profile analysis

Analysis used Mplus 8 (Muthén & Muthén, 1998-2018), applying the maximum likelihood estimator with robust standard errors (MLR) (Muthén, 2004) to conduct a cross-sectional latent profile analysis to identify participant subgroups. This person-centred approach determined latent profiles that have more homogenous response patterns (Muthén & Muthén, 2000). Latent profile analysis was utilized to study

social status types of adolescents based on six variables (physical aggression, relational aggression, help, cooperation, popularity, and likability); all six were assessed using standardized units to facilitate interpretation.

The best-fitting model was selected following guidance from several criteria. The following statistical indicators were assessed: entropy; Akaike information criterion (AIC); the Bayesian information criteria value (BIC) (Nylund, Asparouhov, & Muthén, 2007); the adjusted BIC (aBIC); the Lo, Mendell, and Rubin likelihood ratio test (LMR-LRT) (Lo, Mendell & Rubin, 2001); and the bootstrapped likelihood ratio test (BLRT). A high level of entropy indicates a greater accuracy of classification (Jung & Wickrama, 2008). A lower level of AIC, BIC, and aBIC suggests a better fitting model (Nylund et al. 2007). Moreover, LMRT and BLRT were used to compare the k-1 versus k class model, with significant values of LMRT and BLRT supporting the latter. Once the number of profiles had been determined, ANOVAs were conducted in SPSS (IBM SPSS Statistics 23) to explore how profiles differed from one another. Prior to an analysis of variance, Levene's test revealed that the variances of physical aggression, relational aggression, likeability, and the popularity dataset were not equal ($F(3,814) = 30.32-111.88, p < .001$), so alternative Welch's statistics were adapted to determine the significance.

Finally, the predictors and outcomes of latent profiles were assessed by the R3STEP method and the BCH method in Mplus. Specifically, the R3STEP command was used to conduct multinomial logistic regressions to examine the effect of gender, school attended and self-perceived SES on predicting one student's likelihood of belonging to specific groups. Moreover, the BCH method was performed as a weighted ANOVA in Mplus to examine the differences in students' mental health and learning outcomes across profiles.

Results

Preliminary Analyses

Descriptive statistics and bivariate correlations for the key variables are presented in Table 4.1. Popularity and likeability were positively correlated, as were

the two aggressive behaviours (physical aggression and relational aggression) and the two prosocial behaviours (cooperation and help). Prosocial behaviours (cooperation and help) were positively correlated with social status, particularly likeability.

Aggressive behaviours (relational and physical) were negatively correlated with likeability and had no association with popularity. Moreover, aggressive behaviours and prosocial behaviours were negatively correlated.

Table 4.1 Descriptive statistics and bivariate correlations for key study variables

	Physical aggressive	Relational aggressive	Cooperation	Help	Popularity	Likeability
Physical aggression	-					
Relational aggression	.63**	-				
Cooperation	-.34**	-.36**	-			
Help	-.29**	-.24**	.81**	-		
Popularity	.04	.06	.42**	.46**	-	
Likeability	-.26**	-.21**	.75**	.76**	.63**	-
M	1.98	3.27	17.35	16.92	5.03	10.38
SD	4.13	4.54	8.63	7.54	6.38	7.44

* $p < .05$, ** $p < .001$

Social Status Profile Identification

A four-group model was selected as the optimal solution. Table 4.2 presents the latent profile analysis fit indices for up to five profile groups. The four- and five-profile group models displayed lower AIC, BIC, and ABIC when compared with the previous one-to-three solutions. BLRT indicated that the five-profile model was superior to the four-profile model, whilst the LMR (Lo, Mendell, and Rubin) suggested the opposite ($p = .183$). Comparing groups of the four- and the five-profile models, the first four groups remained stable, and the fifth group only contained 1.8% of total participants. Theoretically, the four-group model was more apt than other models. Thus, the four-group was selected for better interpretability. The four average latent class probabilities were .92, .98, .92, and .97, which indicated that the groups clearly differentiate from each other. Although the entropy value (.87) of the four-group solution was the lowest among the five solutions, it was still good enough to conclude that the four-group solution delivered a precise classification (Muthén &

Muthén, 2000).

Table 4.2 Model fit indices for the latent profile classification with 1-5 classes

Profile	AIC	BIC	aBIC	<i>p</i> LMR	<i>p</i> BLRT	Entropy	Group
1	13946.30	14002.78	13964.67	-	-	1	818
2	12631.30	12720.73	12660.39	.000	.0000	.90	645/ 173
3	11654.14	11776.52	11693.95	.016	.0000	.94	606/161/51
4	11163.62	11318.94	11214.15	.002	.0000	.87	342/325/103/48
5	10781.34	10969.62	10842.59	.183	.0000	.89	328/307/103/65/15

Values in bold type indicate the chosen model in this study.

Note. AIC= Akaike information criterion; BIC= Bayesian information criterion; aBIC= the adjusted Bayesian information criterion; LMR= Lo, Mendell, and Rubin likelihood ratio; BLRT= bootstrapped likelihood ratio test.

All variables were converted to z-standardized score for easier comparison and interpretation. To examine the differences between four profile groups, which will be elucidated below, on internalising indicators (cooperation, help, physical aggression, relational aggression, popularity, and likeability), a series of ANOVAs were conducted. The mean differences of key variables between different profiles can be found in Table 4.3. As seen in Table 4.3, the post hoc analyses (LSD) revealed that early adolescents in different profiles had significant differences in their classification variables, and these are illustrated in Figure 2.

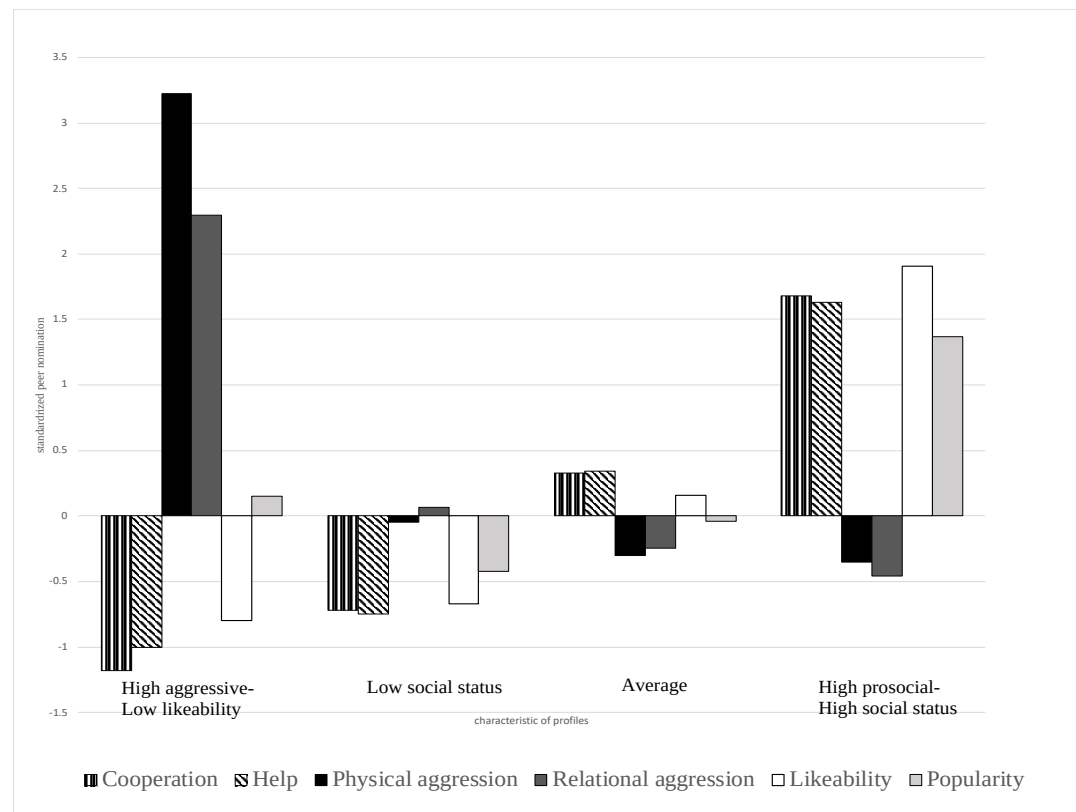
Table 4.3 Mean differences of key variables between different profiles M(SD)

	High aggressive- low likeability	Low social status	Average	High prosocial- high social status	F
Cooperation	-1.18(.45) _d	-.74(.55) _c	.35(.55) _b	1.69(.50) _a	737.38**
Help	-.99(.53) _d	-.76(.57) _c	.37(.55) _b	1.64(.60) _a	556.25**
Physical aggressive	3.24(1.56) _a	-.03(.56) _b	-.32(.34) _c	-.34(.29) _c	103.07**
Relational aggressive	2.31(1.50) _a	.08(.82) _b	-.27(.70) _c	-.46(.48) _d	67.79**
likeability	-.79(.43) _c	-.69(.39) _c	.18(.61) _b	1.93(.73) _a	515.52**
Popularity	.16(.96) _b	-.43(.56) _c	-.04(.80) _b	1.40(1.37) _a	70.84**

Note. Values with different subscripts in the same row are significantly different from one another based on the post hoc analyses (LSD).

* $p < .05$, ** $p < .001$.

Figure 4.2 Characteristics of profiles by their standardized peer nomination score (N = 818)



Profile 1 –high aggressive-low likeability group (N=48) – represented 5.9% of the total sample. This high aggressive group exhibited significantly high levels of aggressive behaviours and extremely low levels of likeability and prosocial behaviours and scored second highest (along with the average group) in popularity. Profile 2 represented 39.7% of the total participants and was labelled as the low social status group (N=325), as they embodied the lowest (along with the high aggressive group) likeability and the lowest popularity. Students in this group performed the second-highest levels of physical aggression and relational aggression and second-lowest levels of helping and cooperation behaviour.

Profile 3 was characterized as the average group (N=342), representing 41.8% of the total sample. This group's participants had the lowest difference in means across the six variables, making them "average" among their peers. The average group scored the second-highest overall on prosocial behaviours and significantly below the sample mean on aggression. Their level of popularity was not significantly different

from the aggressive popular group, but their likeability is the second highest among the four groups. Profile 4 – the high prosocial-high social status group (N=103) – represented 12.6% of the sample. This group scored highest on both likeability and popularity and revealed the highest levels of prosocial-ness and the lowest level of physical aggression (along with the average group) and relational aggression.

Table 4.4 Coefficients for the four profiles with gender, school attended and SSS as predictors

	Low social status vs Aggressive		Low social status vs Average		Low social status vs High social status		Aggressive vs Average		Aggressive vs High Social status		Average vs High social status	
	logit	odds	logit	odds	logit	odds	logit	odds	logit	odds	logit	odds
Gender	-2.45***	.09	.59**	1.81	.42	1.53	3.04***	20.98	2.87***	17.67	-.17	.84
School	.56	1.76	.62*	1.86	1.45***	4.25	.06	1.06	.89*	2.42	.83*	2.29
SSS	.03	1.02	.22**	1.24	.39***	1.47	.20	1.21	.36*	1.43	.17	1.18

* $p < .05$, ** $p < .001$, *** $p < .0001$.

Table 4 presents the effects of gender, school attended (public vs private), and subjective social status on predicting a student's profile membership using multinomial logistic regressions. Chi-square analyses indicated that gender differences, school attended differences, and subjective social status differences in profile membership were significant, $\chi^2(9) = 45.88, p < .0001$; $\chi^2(45) = 98.83, p < .0001$; $\chi^2(3) = 35.29, p < .0001$.

The comparison of the aggressive group, average group, and high social status group with the low social status group (as a reference group) revealed that students in the private school were more likely to fall into the average or high social status group than students who attended public schools ($B=.62, p < .05$, odds ratio [OR]=1.86; $B=.145, p < .0001$, OR=4.25); similarly, students with a high level of subjective social status predicted an increased likelihood of being placed in either the average or high social status group ($B=.22, p < .001$, OR=1.24; $B=.39, p < .0001$, OR=1.47). When comparing the high social status group relative to membership in the aggressive group, the results indicated that students in private schools had a higher possibility than students in the public schools to fall into the high social status group ($B=.89, p < .0001$, OR=2.42) and students with higher self-perceived SES (Socio Economic

Status) were also associated with increased odds of belonging in the prosocial group rather than the aggressive group ($B=.36, p < .05, OR=1.43$). Finally, when using the average group as the reference group, students in private schools were more likely than students in the public schools to fall into the prosocial group ($B=.83, p < .05, OR=2.29$).

In terms of gender, the results revealed that 94% of the aggressive group were boys; the gender distributions of the other three groups were more balanced. Table 4 indicated that girls were more likely than boys to fall into the low social status group rather than the aggressive group ($B=-2.45, p < .0001, OR=.09$). Compared to girls, boys are more than ten times likely to be in an aggressive group, rather than a prosocial and average group ($B=2.87, p < .0001, OR=17.67$; $B=3.04, p < .0001, OR=20.98$). Moreover, when using the average group as the reference group, the results indicated that boys were more likely to fall into the low social status group than girls ($B=.59, p < .001, OR=1.81$).

Table 4.5 Differences between four profiles on wellbeing and learning outcomes M(SD)

	High aggressive-low likeability	Low social status	Average	High prosocial-high social status
Psychological wellbeing	40.27(1.03)b	40.86(.51)b	45.45(.40)a	46.70(.73)a
Academic achievement	-.51(.17)c	-.41(.06)c	.23(.05)b	.74(.07)a

Note. Values with different subscripts in the same row are significantly different from one another based on the BCH method.

Table 5 displays the mean and SD of the wellbeing and learning outcomes across all four profiles. Profiles had a main effect on psychological wellbeing and academic achievement ($F(3,814) = 13.832, p < .0001$; $F(3,814) = 48.75, p < .0001$). As shown, the psychological wellbeing of the average and prosocial groups was significantly higher than those in the low social status and aggressive groups. Notably, there were no differences between the wellbeing of low social status adolescents and aggressive adolescents. Moreover, those in the prosocial group exhibited the highest level of academic achievement, whereas the low social status and aggressive students obtained

the lowest academic achievement.

Discussion

Prosocial and aggressive behaviour have long been researched in social status studies, however, the nature of the relationships between these behaviours and social status has remained unclear. Due to the complexity and interdependency of these variables, a latent profile analysis study to some extent may offer a new perspective on these relationships. The current study aimed to identify the naturally existing social status groups in China in early adolescents and to determine whether prosocial and aggressive behaviour could co-exist within a social status profile. Furthermore, it aimed to explore the associations between profiles and gender, self-perceived SES, school attended, academic achievement, and psychological wellbeing to further characterize these profiles. Using latent profile analysis, four unique social status profiles were identified, and their prevalence was documented. Moreover, these profiles not only had significantly different social status characteristics, but also different patterns of association with the above-mentioned variables making it possible to characterize them more fully. As predicted, the study failed to locate a bi-strategic group in the Chinese sample but did discover a low social status group that had not been uncovered in the Western literature which is discussed further below.

The study identified approximately 6% of the sample as comprising the high aggressive group. It should be noted that the name of each group is not intended to label or call out those students but to address readers' attention to their distinct qualities. Peers seldom identified students in this group as performing prosocial behaviours but always signalled they conducted aggressive behaviours. These high aggressive students were not well-liked by their peers but were somewhat (higher than the low social status group and same as the average group) popular in their classes. Although aggressive students with a low level of likeability have been found in both variable and person-centred studies, previous studies have been inconsistent about the prevalence of this aggressive popular group: one found under 5% of the sample fit in this description, whereas the other found around 15% of the fitted

sample (Hartl et al., 2020; Berger et al., 2015). This may come from the different indicator choices as illustrated in the introduction. Other than this, differences in prevalence may be explained by the different levels of cultural endorsement of aggressive behaviours in different countries. Countries which value physical power or emulation would be more likely to have a higher level of tolerance of their adolescents performing this type of behaviour (Cillessen & Mayeux, 2004), thus may lead to a higher prevalence of aggressive teenagers.

The low social status profile as characterized in this study does not appear to have been found in previous research. This group, representing around 40% of the sample, was the only group identified with below-average scores on both popularity and likeability, indicating that these students were left out by their peers when nominating popular and likeable nominees. The average group also contained approximately 40% of the sample and was characterized by the second-highest prosocial behaviour, the second-lowest aggression, and an average level of social status. Thus, the low social status and average groups significantly differed in their aggressive, prosocial, and social status levels and had significantly different associations with all predictors and outcomes, further discussed below. Therefore, there is no doubt that these two groups are distinct, at least in this sample. However, previous latent profile analysis studies have failed to discover this low social status group and instead have classified around 65%-75% of their samples in the average group. It is therefore plausible that previous studies might have aggregated these two groups within the average group, but more research is needed to validate this speculation.

This newly found low social status group resonates with the “neglected group”, which has been categorized in sociometric status studies as a group of children with low visibility who are neither liked nor disliked by their peers, when deploying a statistical criterion of the nominated social preference and social impact (van der Wilt et al., 2018). The current study could not rule out the possibility that low social status students were also not disliked by their peers as no data on disliked children were

collected due to ethical concerns. It is conceivable that the low social status group may contain some neglected students. However, several other characteristics would suggest that the low social status group is different from the neglected group. First, the neglected group has been found to be less aggressive than the average group (van der Wilt et al., 2018) whereas low social status students in this study had a significantly higher degree of aggression than those in the average group. Second, some researchers have indicated that the advent of the neglected group may be due to the use of a limited nomination procedure which might boost the number of children in this group (Terry, 2000). On average, the neglected group was found to encompass 9% of the population. However, the present study applied an unlimited nomination technique and found a particular predominance of students (40%) in this specific group. Third, previous sociometric status studies suggested that the neglected group was not at risk of developing negative outcomes due to its unstableness and similarity to the average group. However, this study uncovered the low social status group performed as a moderate version of the high aggressive group and at a high risk of having low wellbeing and low academic achievement; details will be illustrated in the below section. Thus, it is possible that the low social status and the neglected group may share some nuanced meanings but overall, the evidence suggests they are two distinct groups.

If the low social status group is unique in Chinese schools, the typical class size in China might be an alternative explanation to account for its presence. The class sizes and student-faculty ratio in Chinese junior high schools are much larger than in Western middle schools. The average class size in two participating public schools was 47. Such a large class size makes it difficult for teachers to track each student's development and give them enough attention (Beattie & Thiele, 2016). If those students who develop slowly in their studies and social skills are not supported by their teachers promptly, they may be considered unvalued or unattractive to study or hang out with by their peers and gradually may develop maladjusted strategies to cope with this situation. Ultimately, these quiet, perhaps a little reserved, students may not

have been given adequate attention, and thus formed this low social status group. More investigations to scrutinize this group are needed.

Last, the high prosocial-high social status group encompassed around 13% of the sample and was underlined by its remarkably high prosocial performance, low aggression, and unanimous acceptance and social dominance. All prosocial groups in previous studies, alongside the current study, confirmed this group of adolescents had the highest likeability among their peers. However, in contrast to Western studies, the high prosocial group in China in this study also had the highest popularity. When the prosocial group was compared with the average group, it indicated the absence of aggressive behaviours alone is insufficient to achieve full-scale (both likeability and popularity) high social status; it must be accompanied by a high level of prosocial behaviours. As Chinese students grow older, so does their intense academic burden. Moral courses that are not included in the college entrance examination often give way to more “important” courses, such as Math, Science, or Chinese. These results should encourage teachers to incorporate prosocial education into their classrooms and could serve as a reminder of the need to increase the weighting of prosocial education in the curriculum in Chinese schools.

Finally, the bi-strategic group was not found in the present study as no profile contained both prosocial and aggressive behaviour above the sample mean. A supplementary analysis only deploying the more limited profile indicators of a key previous study (i.e., only popularity, aggressive behaviour, and prosocial behaviour, Hartl et al., 2019) to aid comparability, was able to confirm the average popular, prosocial popular, and aggressive popular group, but still failed to reveal a bi-strategic popular group. Thus, there was not a group of students in this sample who performed both prosocial and aggressive behaviour. Like the Master said, 'If the will be set on virtue, there will be no practice of wickedness.' (Confucius & Legge, 2008). Confucianism as the foundation for Chinese culture places great emphasis on the importance of maintaining group wellbeing and harmony, whereas the self-interested nature of aggressive behaviours could potentially harm group stability and lead to

individuals becoming highly loathed and rejected (Zhang et al., 2020), and this may lead Chinese students to be less likely to perform both prosocial and aggressive behaviour. Thus, the failure to discover a bi-strategic group may not result from choosing different profiles' indicators but primarily be attributed to cultural differences. This is the first study to test the bi-strategic group in a collectivist context using a person-centred approach, thus further investigations are still needed.

As theoretically hypothesized in resource control theory, this study was consistent with previous studies in which boys outnumbered girls in the high aggressive group (Hartl et al., 2020). Moreover, compared with girls, boys were more likely to be in the aggressive group than in the prosocial, low social status, or average groups. When using the average group as the reference group, the results indicated that boys were more likely to fall into the low social status group than girls. As low social status and aggressive groups were associated with the lowest psychological wellbeing and academic achievement, this finding suggests boys are more vulnerable to falling into two more maladaptive groups. The findings echo the literature on boy's low achievement (Yu et al., 2020). Thus, more research could explore the cause and further prevent this disadvantageous development.

As illustrated before, private schools, in contrast to public schools, require tuition which explained why school types and subjective social status shared the same pattern of predicting the distribution of profile membership. The results revealed a higher subjective social status or attending a private school predicted an increased likelihood of being in the average and prosocial groups, the two more adaptive profiles among the four profiles. Given subjective SES is a medium-to-strong factor which could potentially affect one's psychological wellbeing (Quon & McGrath, 2015), prosocial behaviour (Cowell et al., 2017), and academic achievement (Sirin, 2005), it is not surprising to see students in the prosocial group had the highest academic achievement and psychological wellbeing. This aligns with numerous previous findings, which showed that prosocial behaviours predict later academic achievement and happiness (Park et al., 2017; Diener & Seligman, 2002). Moreover,

previous latent profile analysis studies found the prosocial popular profile predicted the lowest level of negative externalising behaviours (Hartl et al., 2019), and a social emotional-prosocial profile is associated with the highest academic achievement (Collie, Martin, Nassar, & Roberts, 2019). Again, prosocial behaviour seems a strong indicator of academic achievement and wellbeing, which is testified in both variable-centred and person-centred studies.

However, it is also important to highlight that there is no need to encourage all students to become those prosocial group students if average students are satisfied with their standing. Compared with the prosocial group, the average group had a significantly lower score on academic performance but showed no difference in psychological wellbeing. A study found the relationship between both dimensions of social status and social contentment is nonlinear (Ferguson & Ryan, 2019), which may explain this outcome. Understandably, to maintain high social status, these students need to put a considerable investment of effort and monitoring, which potentially can undermine their psychological wellbeing (Allen et al., 2005). This was also confirmed in previous findings where the prosocial popular group was not superior in terms of their level of anger and disruptiveness than the average group (Hartl et al., 2019). Thus, the finding suggested that although prosocial-ness is beneficial to both performers and receivers (Weinstein & Ryan, 2010), there is no need to spur all students to become perfectly behaved students in terms of prosocial acts. Tough command or too little intervention is both dogmatic, teachers should guide students based on their individual needs. Thus, cultivating adolescents to achieve a balanced amount of prosocial-ness could be a possible adjustment that teachers implement in their classes.

It should be noted that the high aggressive and the low social status groups had the lowest academic achievement and psychological wellbeing. Until now, research has been unclear on whether aggression has the same adaptive functioning as prosocial behaviours, or whether its positive effects come from the association with being recognized among peers (Berger et al., 2015). Although high aggressive

students had some popularity, as this was also associated with the lowest academic achievement and wellbeing, it is hard to believe the aggression is adaptive in a Chinese context. The high aggressive group has long received extended attention; thus, the study particularly highlights the need to pay greater attention to the low social status young people as they also share the same vulnerability as the aggressive group and even had a lower level of popularity. It is worth bearing in mind that the low social status group in this study is a mild version of the aggressive popular group since the youth in this group also had low prosociality (the second lowest) and high aggressiveness (the second highest). According to social learning theory (Hoorn et al., 2016), it is possible that some of these students who already have a propensity towards aggression, would increase their aggressiveness, learning from their aggressive popular peers, to become more popular. Thus, it matters that teachers recognize such students and acknowledge their needs to facilitate them in preventing such maladaptive behavioural development.

Although this study contributes knowledge of social status profiles and their associations with gender, socioeconomic status, school attended, academic achievement, and wellbeing, several limitations could be addressed in future research. First, several other aspects of profiles' indicators were not included in this study. For example, the functions of aggression (proactive and reactive) and verbal aggression were not considered. Researchers have found that popularity has opposite correlations with proactive and reactive aggression (Stoltz, Cillessen, Berg, Gommans & Stoltz, 2016). Moreover, likeability and popularity are the two most dominant forms of youth's high social status (Cillessen & Rose, 2005), but a new suggested form, admiration, has been less well studied (Zhang et al., 2018). Therefore, future research could explore how including the aforementioned indicators might result in slightly differing social status profiles.

Furthermore, the methodological limitations are worth mentioning. First, the data were collected only through peer nomination techniques. A future study could consider integrating both self- and teacher-report to testify the outcomes. Second, this

study is culturally specified as it only pertains to data from Chinese middle schoolers, but the findings are positioned in relation to resource control theory making it comparable with previous studies. Thirdly, the cross-sectional nature of the data could account for some of the differences found compared with previous longitudinal work. A longitudinal study may also be able to shed light on the causal relationships between social status profiles and subsequent academic achievement and wellbeing, which cannot be determined in this study.

Conclusion

Previous research studying relationships between prosocial and aggressive behaviour with likeability and popularity deploying a variable-oriented approach, and earlier person-oriented studies have not been consistent on the nature of natural social status profiles, especially in relation to a bi-strategic group hypothesized by resource control theory. Thus, the current study adopted behavioural and social status indicators using a large Chinese sample and revealed four naturally occurring profiles in early adolescence: a high aggressive-low likeability group, a low social status group, an average group, and a high prosocial-high social status group. Rather than confirming the bi-strategic group, a new group, the low social status group was discovered. By using a person-centred approach, this study was able, to some extent, to untangle the relationships between prosocial, aggressive behaviour with social status, and found that to obtain a high social status in China, both a high level of prosocial-ness and a low level of aggression are required. Further, patterns of associations with gender, self-perceived SES, school attended, academic achievement, and psychological wellbeing were studied to better understand each group. Whilst patterns of associations further characterizing the profiles suggested these were generally comparable to those found in studies in Western contexts, there were several notable departures that extend previous findings. The low social status group was uniquely characterized as exhibiting the lowest academic achievement and wellbeing comparable to their high aggressive peers and given the similarities between these

profiles suggests that more attention should be devoted to these students both in school and in future research. Overall, the study findings build upon and extend the largely Western research knowledge on adolescents' peer relations in a non-Western domain.

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Chapter 5: Differential Effectiveness of Taught and Self-help Mindfulness-based Interventions on Chinese Adolescents’ Well-being, Academic Achievement, and Social Behaviour (Study Two)

This chapter contains the paper “Impacting Well-being, Mental health, Prosocial and Difficult Behaviour, and Coping Strategy: A Comparison of the Differential Effectiveness of Taught and Self-help Mindfulness-based Interventions in Chinese Adolescents,” which has been submitted to the Journal *Frontiers in Psychology* and presented at 5th China International Conference on Positive Psychology.

Abstract

Objectives: To evaluate the effectiveness of a Mindfulness-based Intervention (MBI) for supporting well-being and positive behaviours and for regulating negative emotions and behaviours in a resource-underserved setting with lesser interruption of the regular curriculum. **Methods:** The linear mixed model was used to assess the MBI for changing well-being, prosocial and difficult behaviours, coping strategies, loneliness, depression, anxiety, and stress level. Chinese students from 12 classes in a single middle school participated during timetabled mental health classes in either the taught MBI group (N=129), self-help MBI group (N=116), or control group (N=117). The taught MBI group was taught 8-sessions of modified Mindfulness-based cognitive therapy (MBCT), replacing their normal lessons, whereas students in the self-help MBI group and control group took the original mental health classes. A repeated measure ANOVA and post hoc comparisons were used to analyse the data. Teacher feedback was collected to explore their opinions of the intervention. **Results:** The study found the increase of well-being in the taught MBI group ($d=.51$) was significantly higher than in the control group, but not for the self-help MBI group ($d=.23$). Both the taught and self-help MBI preceded the control group on cultivating prosocial behaviour ($F(2,359) = 4.11, p < .05$, Eta-squared = .02). A significant decrease in loneliness ($d=-.21$) was only found after the taught MBI group, but internalising problems also increased. Finally, the three conditions had different effects on specific coping strategies and no significant changes in depression, anxiety, and stress. Qualitative data revealed that teachers approved the length and content of this intervention but believed it's not conducive to all students. **Conclusions:** MBIs could be further considered in the Chinese educational system as this study demonstrates that MBI courses are beneficial for improving Chinese students' well-being and prosocial behaviours, especially the self-help method which revealed lesser adverse outcomes and supported by teachers.

Keywords: Well-being, Prosocial behaviour, Mindfulness, Adolescents, Chinese schools, Self-help method

Impacting Well-being, Mental health, Prosocial and Difficult Behaviour, and Coping Strategy: A Comparison of the Differential Effectiveness of Taught and Self-help Mindfulness-based Interventions in Chinese Adolescents

Introduction

The increased prevalence of mental health issues and social, emotional, and behavioural problems that teenagers face within schools has prompted schools to look for cost-effective ways to support and cultivate students' well-being and social-emotional development. Recently, Mindfulness-based Programs (MBP) have surged in the education field (Schonert-Reichl & Roeser, 2016; Modrego-Alarcón et al., 2021). Mindfulness is one type of meditation that helps people be aware of their feelings, thoughts, and surroundings, from here and now, without judgments (Zenner et al., 2014). The evidence-based results, from benefiting the functions of the brain to the immune system to behavioural, emotional, and social development explain the passion for Mindfulness-based Intervention (MBI) (Greeson, 2009; Dunning et al., 2019). Thus, both practitioners and researchers have turned to the effects of MBI on adolescents, as students in this age group not only have heightened brain plasticity to learn to be mindful (Giedd, 2008) but also have demonstrated capability and willingness to engage in such interventions (McKeering & Hwang, 2019).

However, a lack of attention has been given to mindfulness in the current Chinese education system despite the longstanding interest in meditation in China. Meditation and mindfulness have long been imbibed into Chinese culture and Confucianism philosophy as the history of Buddhism can be dated back to the Han Dynasty (206 BC–220 AD). For example, Neo-Confucian meditation practice, such as sitting in silence, has been internalised by Confucianists for more than a hundred decades (Teng & Lien, 2016). Moreover, the concepts of mindfulness, such as respect, friendliness, and kindness, are fundamental parts of the Chinese moral system, such that Chinese schoolers would have no difficulties understanding these virtues. A preliminary study conducted in Hong Kong found that a six-week MBI significantly boosted the personal growth of adolescents (Lau & Hue, 2011). Furthermore, another Brief Mindfulness curriculum in Hong Kong adolescents revealed small to medium

effect sizes for improving emotional control, working memory, and reducing internalising problems (Lam & Seiden, 2020). These results provide confidence for the future application of mindfulness in China.

Although there is scant research on mindfulness conducted in students from mainland China, the preceding evidence in the West provides a strong indication that MBIs could be invaluable for Chinese adolescents. A recent meta-analysis not only found that selective MBIs had a positive impact on anxiety/stress, depression, attention, executive functioning, and mindfulness, but also revealed that universal MBIs have impacts on attention, executive functioning, and negative and social behaviour (Dunning et al., 2022). Challenging behaviours, such as inattention, aggression, and hyperactivity, were also found sensitive to the effect of the MBIs (Schonert et al., 2015). Moreover, loneliness, a perceived social isolation experience, is given special attention during adolescence as it is associated with negative emotions and decreased well-being (Laursen & Hartl, 2013). Learning to be non-judgmental to feelings and thoughts may alleviate the adverse effect of being lonely. To our best knowledge, no prior study investigated the effect of MBIs on reducing loneliness.

Further, Mindfulness teaches adopters to use the philosophy of "being more open but less reactive" to cope with their negative feelings and thoughts (Crane et al., 2017), but the outcomes of coping responses after practicing MBI have been inconsistent. Some studies found that people in the Mindfulness-based Stress Reduction (MBSR) group performed fewer avoidance coping strategies (Donald & Atkins, 2016; Tacón et al., 2003) but others did not (Halland et al., 2015; Josefsson et al., 2014). Moreover, other empirical studies have reported that adolescents in the MBSR group recorded lower negative/maladaptive coping scores and higher positive/adaptive coping scores (Hanley and Garland 2014). These outcomes are not directly comparable due to the lack of concurrence about core coping categories (e.g., problem- vs. emotion-focused, approach vs. avoidance, and adaptive vs. maladaptive coping) (Skinner et al., 2003), not to mention the distinctive procedures of MBIs in numerous studies. As suggested

by previous researchers (Carver et al., 1989; Skinner et al., 2003), the current study investigated the effects of MBI on coping responses in a more specific manner, meaning looking at particular strategies rather than broader categories. Hence, the current study tested whether MBIs could benefit Chinese middle school students regarding their negative emotions, difficult behaviours, loneliness, and coping strategies.

Other than decreasing students' negative emotions and behaviours, meta-analysis and reviews have also discovered that MBIs could help students to nurture their strengths by having positive influences on their psychosocial and physical well-being (Gu et al., 2015; Kuyken et al., 2015); self-regulation (Gu et al., 2015); and social and emotional functioning (Schonert-Reichl et al., 2016; Flook et al., 2015). Although meta-analysis has revealed that the effect sizes of MBIs were higher in reducing negative mental traits than increasing positive elements (McKeering & Hwang, 2019), the positive effects shouldn't be overlooked. Thus, the current study examined whether MBIs could be effective on increasing well-being in Chinese adolescents.

Recently, an increasing number of studies have highlighted the importance of performing prosocial behaviour in schools since such action could lead to further prosocial behaviours, creating a benevolent cycle, and students tend to achieve more in this environment (Servátka, 2010). Furthermore, a person-centred study had found prosocial behaviour is a particular important variable for achieving high social status and well-being in Chinese adolescents (Zhou & McLellan, 2021) as undertaking collaborative activities are beneficial for the pursuit of group coherence (Chen & French, 2008). Hence, prosocial behaviour is critical in Chinese schools as it is well-received and appreciated in Chinese culture. Meta-analysis has confirmed MBI has a medium-sized effect on increasing prosocial behaviour, but the link is more robust in adults than adolescents (Donald et al., 2019). Although the result has not been substantiated in Western adolescent samples, MBI may be effective on increasing prosocial behaviour in Chinese adolescents, given the cultural context.

Although Western empirical studies on MBI are abundant, research on

implementation in educational contexts is relatively scant. Other than not attaching enough importance to positive outcome aspects such as well-being, the lack of intervention programme material and availability of personnel trained to deliver interventions (Crane et al., 2012) may explain this situation. Therefore, studies have tended to focus on the effect of Self-help (SH) mindfulness, which doesn't require certificated instructors. Similar to research on MBIs, these studies have also unveiled improved mindfulness and well-being when implemented with Western students (Taylor et al., 2014; Karing & Beelmann, 2021). However, the majority of studies on self-help have no comparisons or used a passive control group which undermines the robustness of existing findings (Felver et al., 2016). For example, a more recent study has discovered that when examining MBIs with active control groups, no significant differences were found in changes of social behaviour, negative behaviour, and executive functions (Dunning et al., 2019). Hence, more rigorous studies are needed to understand the precise effects of MBIs. Given there are many resources for Mindfulness-based Cognitive Therapy Self-help (MBCT-SH) in China, such as Chinese versioned books, Chinese Audio instruction, and Apps, self-help could be a feasible and applicable way to promote mindfulness on a large scale considering the absence of certificated MBI teachers in China.

In all, previous results are promising, but these mainly North American- and European-conducted studies may not generalize to other school settings, especially in Chinese schools, with different cultural values and bigger class sizes. Taken together, the current study, with an active control group, aimed to investigate 1) whether an MBI could be effective on mental health well-being, prosocial and difficult behaviour, negative emotions, loneliness, and coping strategies, 2) whether an MBI-SH affects mental health well-being, prosocial and difficult behaviour, negative emotions, loneliness, and coping strategies, 3) whether effectiveness varies by condition in Chinese adolescents, when delivered in traditional class settings, during regular class time?

Methods

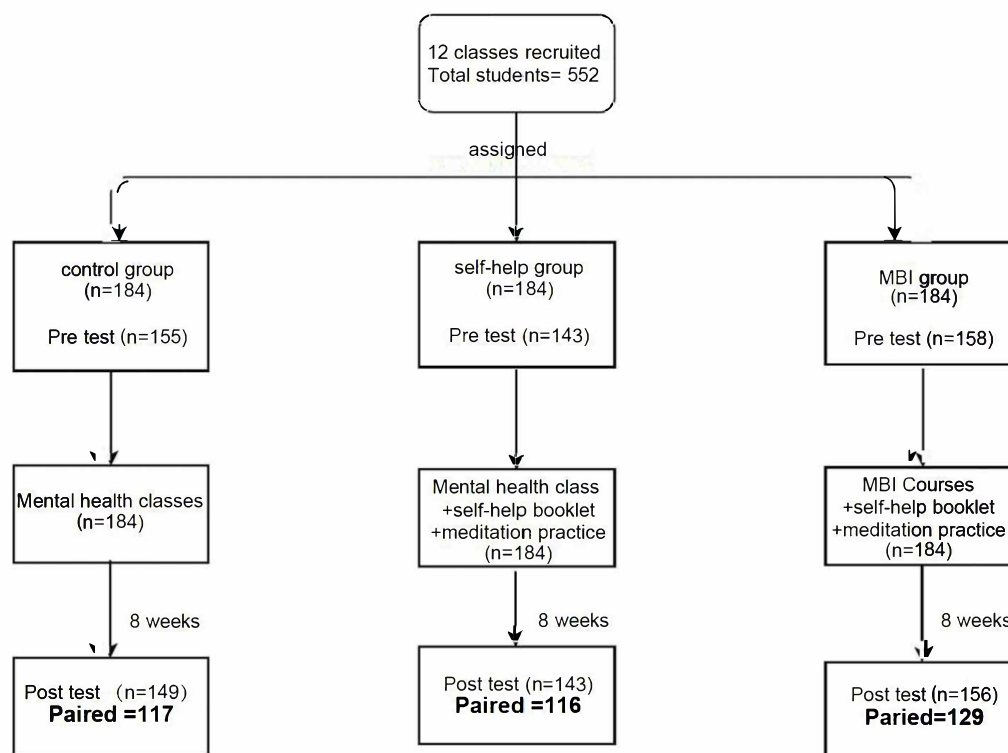
Participants

The study was conducted between October and December 2020, recruiting a total of 552 adolescents (mean age=13.03, SD=0.50, 47.5% girls) from an urban Chinese private school. The study was carried out during the COVID-19 pandemic; however, the city where the study was conducted was relatively unaffected, leading to a limited impact of the pandemic on the school administration level. The pragmatic cluster-controlled trial was used in this study to avoid disrupting the units of the original administrative classes. Thus, there was no eligibility criteria for attending this study. This study had received institutional ethical approval and followed the British Educational Research Association (BERA) guidelines. Permission was obtained from the school administration, and informed consent was obtained from students directly. Specifically, students had the option to opt-out in terms of sharing data by not returning their questionnaires.

Grade 7 and 8, totalling 12 classes (6 classes each), were recruited, and then were randomly assigned to the control group, the self-help MBI group, and the taught MBI group (see Figure 5.1). The study was originally intended to randomly assign 12 classes to three different conditions, however, as is often the case in educational systems (Styles & Torgerson, 2018), the allocation of classes into different conditions was determined by the headteachers for administrative purposes. Each condition was designed to include four classes, two from each grade. Three hundred and ninety students, around 71% of participants, indicated their willingness to share their data. Fourteen pairs of cases that reported the same student IDs were excluded due to being unable to identify their pre-and post-data. A final of 362 students were involved in the analyses: the control group contained 117 students; the self-help MBI group consisted of 116 students; the MBI group comprised 129 students. None of the students reported any previous experiences with mindfulness or meditation during class discussions. All 362 students attended the whole eight sessions programme, as this training was

integrated into their curriculums. Previous research implementing MBIs in schools has suggested that mindfulness practice in a small number of cases can cause mental health issues (Cebolla et al., 2017), but no objective harms were found (Aizik-Reebs, Shoham & Bernstein, 2021). A crisis management plan (e.g., phone number of school therapists) was in place. In addition, the first author holds a master's degree in mental health counselling and has experience in mindfulness training so is well qualified to conduct the study.

Figure 5.1 the flow diagram of the current study



Procedure

The setting was chosen as this school has a fixed arrangement for a mental health course, which could easily be replaced with MBI without interrupting the rest of the curriculum. The MBI training was introduced as free of charge and an innovative mental health course delivered by the first author to students over a period of 8 weeks. This course was first presented to the principal and headteachers (teachers in charge of classes) in the MBI conditions because their cooperation was essential to smooth

implementation. The aims and contents of each session were illustrated in order to facilitate understanding and strengthen collaboration. The length of each class was 40 mins, and the group sizes were around 45 in all three conditions. Pre-intervention measurements were collected before the program launched, and the post-intervention was collected after the 8-sessions of classes.

Program description

This 8-week mindfulness-based training is a secular, face-to-face intervention designed for healthy adolescents to facilitate school life without disrupting their regular curriculum. The general aims of the current program are to optimize students' 1) well-being, 2) social-emotional development, 3) coping strategies, and 4) better school behaviours. The program was largely based on the book "Mindfulness: the practical guide to finding peace in a frantic world" (Williams & Penman, 2011), which provided detailed illustrations of MBCT and Audio-guided meditation instructions to help readers incorporate mindfulness into daily life. The approval of usage and minor modifications of this book were obtained from the authors prior to the start of the study. The adaptation retained the suggested essential elements of MBPs detailed in previous research (Crane et al., 2017) such that the program comprised three main domains: 1) daily meditation practice, 2) weekly assignments, 3) psychoeducation. The elements applicable to each condition are outlined in Table 5.1. The contents of the regular mental health curriculum (control group) are in Table 5.6.

Table 5.1 The main subjects of three conditions

	Daily meditation	Weekly assignments (Readings and activities)	Psychoeducation
Taught MBI	Practiced after lunch	Discussed during the classes	MBI taught by the first author
Self-help MBI	Practiced after lunch	Read and tried "habit releaser" voluntarily	Original mental health classes taught by their teachers
Control group	None	None	Original mental health classes taught by their teachers

1. Daily meditation practices were encouraged for both students in the self-help MBI and taught MBI groups. The Chinese audio guidance accompanied from the mentioned book was used in this study to guide students' after-class practices. The group practices happened during the lunch hour and were managed by headteachers. Those teachers in the self-help group and taught group were asked to report how many times they arranged practices.
2. Weekly assignments contained readings and habit releaser activities. The Mindfulness booklet used in this study was derived from *mindfulness: the practical guide to finding peace in a frantic world, Chapter 5 to Chapter 12*. The “habit releaser” activities are essential elements in this book. Specifically, the booklet adopted the contents related to student life and did minor adaptations to be adolescent-friendly (e.g., changed examples from workplaces to schools). This booklet was handed out to students both in the self-help MBI group and taught MBI group, and students were encouraged to read one chapter every week.
3. Psychoeducation consisted of 8 sessions (40mins each). Students in the self-help MBI and control group took their regular mental health classes, whilst students in the taught MBI condition had special mindfulness- based classes delivered by the first author. The session content of the special classes was mainly based on the book "*Mindfulness: the practical guide to finding peace in a frantic world*". Each psychoeducation session in this condition typically started with a discussion about students' thoughts regarding meditation practices and habit change activities over the previous week, followed by the introduction of new ideas including the week's related theories, stories, and class activities. At the end, the facilitator provided an opportunity for students to ask questions and explain the homework. These psychoeducation sessions offered students spaces to openly discuss their feelings and questions about their readings. This approach followed the framework of the

original source book to retain core elements (Crane, 2016), although the delivery was formatted to suit the Chinese middle schoolers. However, the core elements in the book were supplemented with related knowledge of brain science and some activities from the Learning to BREATHE program (Broderick, 2013) to deepen students' understandings and facilitate the learning process. Permission of usage for the latter was also obtained from the author prior to the study. Finally, Mindfulness-Based Interventions: Teaching Assessment Criteria (MBI: TAC) (Crane et al., 2013) was also used to guide the teaching process during the sessions to ensure a combination of psychoeducation and first-person learning procedure.

Measures

WEMWBS-mental health well-being

The Warwick– Edinburgh Mental Well-being Scale (WEMWBS) was used to assess students' well-being (Tennant et al., 2007). This scale contains 14 items with a 5-point Likert scale. It includes hedonic (e.g., positive and negative affect, life satisfaction) and eudaimonic (e.g., personal growth, flourishing) aspects of well-being by capturing subjective well-being and psychological functioning. A higher score indicates better mental health well-being with good scaling properties. The Chinese version of WEMWBS has demonstrated good validity and internal reliability in a Chinese undergraduate sample (Dong et al., 2016). The Cronbach alpha coefficients of this scale at two different time points in the current study were .87 and .93.

SDQ

The Strengths and Difficulties Questionnaire (Goodman, 1997) was used to assess students' behavioural changes. It contains five subscales (emotional symptoms, conduct problems, hyperactivity/inattention, peer relationship problems, and prosocial behaviour) to measure emotional and behavioural problems in children and adolescents. Studies used different factor-analytic method reviewed mixed findings

for factor loading in several population (Achenbach et al., 2008). In this study, following the recommendations of the previous study (Goodman et al., 2010), the five separate subscales were deemed more appropriate for high-risk populations. To ensure a more conservative approach for the community sample, the final scores were calculated into three categories: 1) internalising problem, 2) externalising problem, and 3) prosocial scale, as recommended in the same study. The Chinese version of SDQ has been extensively used in Chinese adolescents and has shown good reliability and validity (Liu et al., 2013). The internal consistency of three subscales was also high in this study, ranging from .70 to .74.

DASS-21

A Chinese version of Depression Anxiety Stress Scale-21 (Lovibond&Lovibond,1995) was adopted to measure negative mental health symptoms of students before and after the intervention. This 21-item scale is rated from 1 (not at all) to 4 (always) and contains three subscales, depression, anxiety, and stress. Each subscale contains seven items. The Chinese version has shown good reliability and validity in both clinical and non-clinical samples (Jiang et al., 2020). In this study, the internal consistency of three subscales, depression, anxiety, and stress, was also high, ranging from .92 to .95.

Brief Cope

The Chinese brief COPE (Carver, 1997) translated by Ye (2008) was used to measure coping strategies that adolescents use. It contains 28 items and comprises 14 subscales; example subscales are humour, disengagements, and planning. Students were asked to answer how often they use those strategies on a 4-point Likert scale, ranged from 1 (not at all) to 4 (doing it a lot). Although researchers delineate maladaptive or adaptive coping strategies based on these 14 subscales, there is no agreement on which subscales should be included in these two second-order dimensions (e.g., maladaptive vs. adaptive coping) (García et al., 2018). The subscales on substance use choices, which is uncommon in Chinese middle school students, and religion which is inappropriate for the Chinese context, were excluded.

Thus, 12 of the original strategies were assessed to investigate the effects of MBIs on different coping approaches. The subscales of acceptance, venting, self-distraction, and humour had internal consistency less than .50. The internal consistency of the rest of the subscales was ranged from .54 to .73.

Loneliness

The UCLA-loneliness scale has been used in both teens and adults and assesses the frequency of feeling lonely (Russell, Peplau, & Cutrona, 1980). It contains 20 items which asked on a 4-point rating scale (1=never, 4=always). A higher score indicates more intense feelings of disconnection. This scale has been validated in the Chinese population with good validity and reliability (Wu et al., 2010). The internal consistency of UCLA-loneliness in this study was .89 for pre-test and .91 for post-test.

The mediation practices for the self-help MBI and the taught MBI groups took place during the student's lunch hour as a group session overseen by the relevant class teacher. It was not feasible to run every day as students sometimes needed to take a nap or do their classwork. Forms were distributed to participating groups' teachers to record how many times their students practiced during the 8-week program.

Teacher interview

Four teachers from the taught MBI group were invited to attend a focus group interview after the post-test to explore teacher perceptions of the intervention (see Appendix G). Questions raised by the researchers included teachers' observations of changes in students, and their comments and suggestions about this intervention. Given the lack of personnel and extended benefits of delivering MBI by teachers embedded in schools (Johnson et al., 2016), teachers were asked about their willingness to learn and teach this course.

Data analyses

Missing values in SPSS were replaced with multiple imputations using an EM algorithm. Missing values in Mplus were addressed by the Full Information Maximum

Likelihood (FIML), using all available data to maximize the information. A series of t-tests was conducted to examine the within- and between-group differences. A Paired-sample t-test was used to measure the changes within groups (regular mental health class group, self-help MBI group, and taught MBI group) on WEMWBS, SDQ, DASS-21, Loneliness, and Brief Cope. Moreover, General linear models (GLM) were used for comparisons between three groups on the change of WEMWBS, SDQ, DASS-21, Loneliness, and Brief Cope. This was followed the multi-level modelling using “xtmixed” command in Stata to determine where the differences occurred between these groups. The linear mixed model used here also included gender, whether students live in school, and age as covariates, accounting for the nested nature of the data. Cohen’s d was used to calculate effect sizes in G*Power as standard deviations and group sizes are the same in the pre-intervention test and post-intervention test. An effect size of 0.2 was considered as the cut-off point of small, 0.5 for medium, and 0.8 for large (Cohen, 1988).

Results

All students in the taught MBI group attended 8 sessions. Teachers in the taught MBI group reported a mean of 21 practices (SD=1.41) and teachers in self-help MBI group reported a mean of 24 practices (SD=1.89) during the program.

To ensure that the three conditions were statistically equivalent, demographic characteristics and main measurements were tested at the baseline level. No significant difference was found in a series set of comparisons between Control, Self-Help, and Taught MBI groups (see Table 5.2). Following previous studies, "Pillai's Trace" was used for multivariate analysis of variance (MANOVA) to determine whether the overall set of predictors differed significantly across three groups (Field, 2009; Lam & Seiden, 2020). Results indicated that the effect of group across all pre-test measures at baseline was non-significant (Pillai's Trace = 0.14, $F(44, 678) = 1.18, p = 0.21$).

Table 5.2 Mean and mean differences at baseline by conditions.

	Control group	Self- help group	Taught group	F statistic	P value
Female	42.70	50.90	48.84	0.84	0.4331
age	13.15	12.99	12.97	2.03	0.13
Live in school	0.96	0.92	0.88	2.72	0.07
WEMWBS	46.12	47.84	47.25	1.33	0.27
SDQ-prosocial	7.50	7.56	7.36	0.43	0.65
SDQ-internal	6.53	7.00	6.56	0.71	0.49
SDQ-external	6.21	6.56	6.61	1.36	0.26
DASS-Depression	10.97	11.21	10.96	0.17	0.85
DASS-Anxiety	12.40	13.20	12.98	1.03	0.36
DASS-Stress	13.81	14.53	13.51	1.96	0.14
Loneliness	41.75	42.30	42.55	0.17	0.84
disengagement	3.29	3.33	3.21	0.31	0.73
venting	5.01	5.37	5.25	1.78	0.17
blame	5.40	5.45	5.38	0.07	0.93
active	6.16	6.36	6.24	0.71	0.49
emotion	5.09	4.90	5.10	0.61	0.55
instrumental	5.89	5.91	5.92	0.02	0.98
reframe	5.51	5.57	5.50	0.07	0.94
planning	5.93	6.18	5.98	1.13	0.32
humour	3.35	3.52	3.21	1.73	0.18
acceptance	6.33	6.65	6.48	1.85	0.16
Sample size	117.00	116.00	129.00		

* $p < .05$, ** $p < .001$, *** $p < .0001$.

Given the fact that students are nested in classrooms (creating statistical dependency among students in a class) and the between-groups nature of the Repeated Measures Design, the intraclass correlation coefficient (ICC) was calculated to determine how much of the total variation in the outcome variable is accounted for by variation among class levels. Unconditional models were used to estimate the ICCs. According to LeBreton and Senter (2008), an ICC of .05 represents a small to medium effect (p. 838). Since only a very small portion of the variance (0% – 2.7%) was accounted for across classes, this indicates that class is not important in explaining variance in outcomes (see Table 5.3). The reason for this could be that all 12 courses are in the same schools; therefore, the differences

between classes aren't significant in terms of explaining the outcome difference.

Table 5.3 Variance partition for classroom at post-test.

Measurements	ICC	Measurements	ICC	Measurements	ICC
WEMWBS	.009	disengagement	.000	planning	.000
SDQ-prosocial	.011	venting	.019	humour	.000
SDQ-internal	.006	blame	.007	acceptance	.000
SDQ-external	.027	maladaptive	.000	reframe	.000
DASS-Depression	.000	active	.000	instrumental	.000
DASS-Anxiety	.014	emotion	.000	Loneliness	.000
DASS-Stress	.016				

* $p < .05$, ** $p < .001$, *** $p < .0001$.

The following table (Table 5.4) presents the effectiveness of the taught MBI group and the self-help MBI group relative to the control group, while controlling for covariates such as gender, whether lives in school, and age. The results showed no significant MBI impacts on reducing depression, anxiety, stress, or loneliness, or on improving students' coping strategies. However, the taught MBI group had a positive effect on improving mental well-being compared to the control group, while the same effect was not found in the self-help MBI group. Moreover, a 2(Time) x 3(Group) mixed-model ANOVA also revealed a statistically significant difference in mental health well-being with a small effect size among the three groups ($F(2,359) = 3.40, p < .05$, Eta-squared = .02). Additionally, both the taught and self-help groups had a positive effect on improving prosocial behaviour. A significant Time x Condition effect was obtained on prosocial behaviour level ($F(2,359) = 4.11, p < .05$, Eta-squared = .02).

To test the differences between the taught and self-help groups, all models were re-run with the self-help MBI group as a reference group, but no significant differences were found between self-help and taught MBI groups.

Table 5.4 Mean differences in key variables between different groups M(SD)

	<i>b</i>	<i>M(SD)</i>	<i>SE</i>	<i>p</i>
WEMWBS				
Taught group	2.87	3.71(7.39)	1.31	.03*
Self-help group	1.45	2.04(9.03)	1.30	.27

DASS-Depression				
Taught group	-.44	.36(3.06)	.64	.49
Self-help group	-.56	.16(4.04)	.65	.39
DASS-Anxiety				
Taught group	-.57	.06(3.55)	.62	.36
Self-help group	-.94	-.35(4.25)	.63	.14
DASS-Stress				
Taught group	-.79	.11(3.50)	.61	.20
Self-help group	-.95	-.26(4.69)	.62	.13
SDQ-prosocial				
Taught group	.60	.26(1.66)	.22	.01**
Self-help group	.49	.08(1.92)	.22	.03*
SDQ-internal				
Taught group	.54	.61(2.82)	.35	.12
Self-help group	-.02	-.13(3.10)	.36	.95
SDQ-external				
Taught group	.20	-.26(2.78)	.46	0.40
Self-help group	-.39	-1.00(3.14)	.46	0.66
Loneliness				
Taught group	-1.75	1.59(7.63)	1.09	0.11
Self-help group	.09	.30(9.93)	1.12	0.94
COPE-Disengagement				
Taught group	-.07	.35(1.22)	.15	0.62
Self-help group	-.17	.20(1.41)	.1	0.26
COPE-Emotional support				
Taught group	.19	.38(1.56)	.18	.28
Self-help group	-.04	.26(1.64)	.18	.84
COPE-Self-distraction				
Taught group	-.03	.15(1.59)	.19	.87
Self-help group	.19	.40(1.69)	.19	.30
COPE-Self-blame				
Taught group	-.02	-.19(1.44)	.20	.92
Self-help group	-.07	-.28(1.41)	.20	.71
COPE-Humour				
Taught group	-.10	.36(1.27)	.16	.51
Self-help group	-.20	.16(1.29)	.16	.22
COPE-Active Coping				
Taught group	.22	-.04(1.23)	.14	.12
Self-help group	.15	-.16(1.35)	.14	.27
COPE-Denial				
Taught group	-.01	.21(1.48)	.95	.95
Self-help group	.02	.16(1.53)	.92	.93
COPE-Instrumental support				
Taught group	.27	.12(1.42)	.17	.11
Self-help group	-.06	-.20(1.62)	.17	.75
COPE-Venting				
Taught group	.09	.12(1.57)	.19	.61

Self-help group	-.05	-.08(1.53)	.20	.78
COPE-Positive Reframing				
Taught group	.15	.19(1.52)	.17	.37
Self-help group	.09	.10(1.58)	.18	.61
COPE-Planning				
Taught group	.00	.02(1.37)	.16	.99
Self-help group	.13	.04(1.40)	.16	.42
COPE-Acceptance				
Taught group	.86	-.19(1.38)	.15	.57
Self-help group	.23	-.16(1.45)	.15	.14

Note. Models include the following control variables: gender, whether students live in school, and age. $*p < .05$, $**p < .001$, $***p < .0001$.

Teacher feedback

All four teachers agreed the length and content of this intervention was suitable for students but also that not all students needed it. They reached a consensus that 1/3 of students had profited from this intervention, however, the rest of them “were just wasting time”. All teachers reported seeing students try to control their temper in some circumstances and hearing them discuss mindfulness techniques.

The word “aim” appeared 20 times across the interview. Teachers felt the aims of this intervention were unclear for both students and teachers, despite the effects and potential benefits of MBIs being introduced to teachers in the briefing session and listed in the mindfulness handout. Furthermore, teachers believed both teachers and students were lacking motivation to engage with the intervention. One teacher felt he was not part of the program and suggested researchers provide more resources for teachers to explore after the introduction session.

In terms of willingness for learning and teaching this course, all teachers asserted this program was better to be taught by experts. One later added “I know this is useful. If I do not have those duties (duties of being a head teacher), I would love to learn”, and further explained, “Chinese education setting may not be ready for this kind of course.” She thought this course, especially practices, may interrupt students’ study routines because their lunch break was usually used to do schoolwork.

Discussion

The present study examined and compared the effects of a taught MBI, a self-help MBI, and a regular mental health class on mental health well-being, negative emotions, prosocial and challenging behaviours, loneliness, and coping strategies in a Chinese middle school setting. To the best of the authors' knowledge, this is the first study examining the effects of both the taught and self-help MBI on social-emotional aspects in the Chinese school setting. The regular mental health class group served as a baseline for comparison with the MBI groups to scrutinize whether a mindfulness intervention is more beneficial than regular mental health classes. By also comparing the different effects of a taught MBI and self-help MBI, the study extends knowledge theoretically and practically around implementing MBI in Chinese school settings.

The study uncovered that both the self-help and the taught MBI group had significant increases in mental health well-being from pre- to post- test (see appendix), whereas the same outcome was not found in the control group. These findings are in line with previous studies, which revealed that MBPs showed moderate effects on improving well-being in adolescents and adults (Kuyken et al., 2013; Victorson et al., 2015). However, the change of mental health well-being was only detected as a significant difference when comparing the taught MBI and the control group but not in the comparison between the self-help MBI and the control group. Students in the two MBI groups undertook similar amounts of meditation practice (taught MBI: 21 times, self-help MBI: 24 times). The taught group had courses about MBCT and relevant brain science resources, whereas the self-help group had regular mental health classes. These findings suggest that the psychoeducation component in the taught MBI group may have provided an additional benefit to the students' daily practices, leading to a significant improvement in well-being that was not observed in the self-help MBI group. However, the potential impact of convergence and interpersonal relationships between students and facilitators cannot be ruled out.

The change of prosocial behaviour for the taught and self-help MBI groups did not differ statistically, but these groups were different when compared to change in the control group. The effect of MBI may be to facilitate maintenance of the level of prosocial behaviour, as the prosocial behaviour decreased in the control group and at the time of the study all groups of students were under increasing stress as they were approaching a final exam. This finding is in line with a meta-analysis which found mindfulness intervention positively linked to prosocial behaviour (Donald et al., 2019). Moreover, one study revealed that those individuals based in interdependent cultures were more likely to report improved prosocial behaviour after mindfulness practices, whereas those in culture emphasizing independent self-construal would demonstrate the opposite (Poulin et al., 2021). The current study attested this finding in China, a country prone to interdependent orientation (Varnum et al., 2010), where MBI here appeared effective for Chinese students to cultivate prosocialness. Although the taught MBI seems to have greater effects on improving well-being and prosocial behaviour than the self-help MBI, it is reasonable to suggest that self-help MBI may be an effective and pragmatic way for Chinese middle schools to promote higher well-being and prosocial behaviour with scarce resources.

The internalising problem subscale, which includes emotional and peer problems, increased significantly after the taught MBI with a small effect size, but the same effect was not found in the other two groups (see appendix). This finding of increased internalising problems such as irritability and anger seems to contradict the previous findings of increased well-being and improved prosocial behaviours in the taught MBI group. The increased internalising problems may be due to the increased awareness of feelings and emotions and the encouragement from instructors to openly discuss thoughts and feelings with their peers. Although negative expressions may bring emotional problems and conflicts, these did not encumber their prosociality and well-being. However, it is important to note that factor analysis studies on the Strengths and Difficulties Questionnaire (SDQ) have yielded inconsistent results regarding the number of factors present, particularly in different contexts (Van Roy,

Veenstra, & Clench-Aas, 2008). In addition, peer problem under the internalising problem subscale was also found to have low convergent validity (Warnick et al., 2008). Thus, a more thorough analysis and interpretation is necessary to gain a complete understanding of this outcome. Furthermore, the self-help MBI and control groups had a more substantial effect on decreasing students' externalising problem levels, but the same effect was not found in the taught MBI group. This result is somewhat in line with the MYRAID study, which found higher hyperactivity/inattention at both post-intervention and 1-year follow-up among MBI group students (Kuyken et al., 2022). Future studies could further investigate whether MBI has an adverse effect on externalising problems.

Interestingly, the study failed to find decreases in the levels of students' depression, anxiety, and stress after eight weeks of taught and self-help MBI practices, in contrast to what many of its adherents had claimed in previous research (Dunning et al., 2022). There were no differences between the changes of level of negative feelings (depression, anxiety, and stress) in the three groups tested. These finding still echo with some studies, a preliminary MBI study conducted in Hongkong adolescents which was also unable to locate a decrease in their self-perceived stress level (Lau & Hue, 2011) and another class based MBI training was also found no changes which assessing the same measurement (Johnson, Burke, Brinkman & Wade, 2016). Moreover, a randomized trial study of MBCT pointed that the significant anxiety reduction was mainly found in those clinically high anxious students and failed to settle the question of whether anxiety reduction in general can be attributed to such interventions (Semple et al., 2010). Thus, floor or ceiling effects may explain the results of the current study to some extent, considering the average score of DASS at the baseline were relatively low, with the overall averages indicating a normal level of stress (13.78), a normal level of depression (8.08) and a moderate level of anxiety (11.72), suggesting that potentially most of the participating students did not have clinically high enough scores to show a decrease. Furthermore, the significant increase in depression, anxiety, and stress in the regular mental health classes group

might be explained by the lead-up to the final exam. If that is the case, remaining at the same level of depression, anxiety, and stress could be deemed comparative resilience for students in the two MBI groups. Future studies may further delve into the possible explanations for this discrepancy.

A significant decrease in loneliness was found after the taught MBI courses, but the same result was not found in the other two groups. This finding is in line with the improved prosocial behaviour and well-being also seen in the taught MBI group, but seemingly contradicts the reported increased internalising problems in this group, which includes reports of being solitary and tending to play alone. In fact, an increased frequency of playing alone does not necessarily mean an increased level of feeling loneliness (Yanguas, Pinazo-Henandis & Tarazona-Santabalbina, 2018). Thus, such behaviours as being by yourself, which are categorized as internalising problems on the SDQ, may not lead to bad feelings. Moreover, the decreased level of loneliness found in the taught MBI group may be attributed to more prosocial behaviours performed in this group and in consonance with enhanced well-being. Future studies are needed to unpack this mechanism further.

Although some significant outcomes were revealed in the changes of coping approaches across the different groups, these results may be questionable due to the low internal consistency of certain subscales and uncertainty of the motivation sitting behind individual coping behaviours assessed. The study found that the taught MBI group and the control group had significant increases in behavioural disengagement (e.g., giving up trying to deal with something) and humour after 8-week sessions with minor to moderate effect sizes. The taught MBI group was also found to increase on scores on the emotional support domain. Moreover, self-distraction significantly increased after the self-help mindfulness training, whereas the self-blame had significantly decreased with small effect sizes. The internal consistency of humour ($\alpha=0.38$), behavioural disengagement ($\alpha=0.59$), and self-distraction ($\alpha=0.47$) in this data were low, and similar to the low internal consistencies that were reported in a validation study in Malay (humour ($\alpha=0.51$), self-distraction ($\alpha=0.58$)) (Yusoff, 2011).

Moreover, as illustrated in previous studies, it is hard to distinguish whether the goal of coping strategies, such as humour and self-distraction, is self-enhancing or self-defeating (Martin et al. 2003, Tang et al., 2016). The same may be said for behavioural disengagement, as students in the MBI and the control group may display giving up behaviours for opposite reasons. Thus, these outcomes are not sufficiently credible to be further interpreted.

However, the internal consistency of emotional support was high ($\alpha=0.65$) in the current study. Seeking emotional support from others is adaptive and may result from an enhanced prosocial atmosphere in classes and the destigmatisation of negative emotions which students learned from MBI psychoeducation. It is fair to say that the taught MBI course had a positive impact by increasing the use of emotional support, but the rest of the outcomes may need further confirmation. Taken together, the brief COPE measurement needs further investigation to be utilized in Chinese samples. Future studies could study this via another angle such as exploring the flexibility in the use of coping strategies rather than a type of strategy to investigate the effects of MBI.

Pragmatically, although having a trained teacher to deliver MBI was found to provide more lasting effects at a follow-up time point (Carsley, Khoury, & Heath, 2018), the self-help MBI may better fit the Chinese situation as an initial attempt for broader usage purpose. As demonstrated before, both the taught and self-help MBI resulted in positive outcomes on mental health well-being and prosocial behaviour. Whilst the taught MBI group revealed a stronger effect on these two domains and extended effects on decreasing loneliness and improving emotional seeking strategy, increased internalising problems were also found in this group which cannot fully be explained. Furthermore, teacher feedback also supported the idea of using the self-help method for initial implementation. Workload and academic responsibilities may hold teachers back from learning this course and spreading it further. Teachers also conveyed the idea that not all students need this intervention and implied their concerns about a potential adverse effect on students' academic life. Thus, adopting

MBIs into academic-oriented schools on a large scale may result in dissenting opinions. However, introducing mindfulness as a self-help method that students could voluntarily use or not potentially eases the concerns that teachers have. Finally, students in the two MBI groups practiced meditation 3 to 4 times per week, so future studies could further explore whether this frequency and sustainability of practices is optimal to benefit this target audience or whether other patterns could better help this age group.

There are several limitations of this study. First, the mindfulness level, which is considered as a core mechanism of MBPs (Felver et al., 2016), was not evaluated in the current study. Future studies could include measuring mindfulness change, but it is not the question the current study intended to answer. Second, randomisation at group level reflects the structure of real-world settings, however, the lack of randomisation at an individual level may lead to unobserved class-level variables impacting the results. Future studies could also consider using a double-blind design to overcome potential expectation effects, which were unavoidable in this exploratory study as the first author was also the instructor. Furthermore, this experiment was operated in one private school, thus school climate might be another factor which facilitates these outcomes.

Third, the study could not rule out the possibility that students who were willing to complete the questionnaire were those who favoured this program. Moreover, the analysis was based on participants who completed both pre- and post-intervention tests, and it is possible those students who agreed to be included and handed in both tests had similar traits or shared characteristics relevant to the study. This may undermine the veracity of the outcomes. Fourth, this study could not eliminate the intentional effect and bias of self-report. Students might emphasize changes due to their own expectations and social pressures. Thus, future studies could introduce different forms of assessments, such as instrumental measurements, teacher observations, or parents' reports.

Conclusion

The results showed that MBIs in both the taught and self-help forms had positive effects on mental health well-being and prosocial behaviours without needing certificated facilitators when administrated in a Chinese class setting. China's interdependent cultural background may therefore provide fertile soil for this Eastern-born, and Western-advanced skill to take root, as its effect on prosocial behaviour may be better implemented in such ground. Both taught MBI and self-help MBI resulted in encouraging outcomes to support future implementation in Chinese schools with carefully monitoring. Furthermore, the current study offers a feasible way to integrate mindfulness into Chinese classrooms without changing the existing curriculum, splitting administrative classes, or hiring experienced mindfulness trainers. Specifically, it can be tentatively suggested that the self-help approach may be a more effective and pragmatic way to conduct MBI in Chinese middle schools with scarce resources as students in this group achieved similar benefits to those in the taught MBI group, whilst also appearing to incur lesser potential adverse effects.

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Appendix

Table 1 Outcomes in the taught MBI group pre and post intervention

Outcome	Before taught MBI		After taught MBI		95% CI for MD	r	t	d
	M	SD	M	SD				
WEMWBS	47.25	7.50	50.96	9.67	2.43, 5.00	.66**	5.71**	.51
SDQ-prosocial	7.36	1.91	7.61	1.87	-.03, .55	.61**	1.75	.15
SDQ-internal	6.56	3.22	7.17	3.61	.12, 1.10	.63**	2.45*	.21
SDQ-external	6.60	2.79	6.35	2.85	-.74, .23	.56**	-1.05	-.09
DASS-D	7.92	7.12	8.65	9.13	-.34, 1.79	.74**	1.35	.12
DASS-A	11.95	8.84	12.08	9.63	-1.11, 1.36	.71**	.20	.02
DASS-S	13.02	7.21	13.24	8.87	-1.00, 1.43	.64**	.35	.03
Loneliness	42.55	10.25	40.96	11.77	-2.92, -.26	.77**	-2.37*	-.21
COPE-Disengagement	3.21	1.23	3.56	1.32	.14, .56	.55**	3.26**	.29
COPE-Emotional support	5.10	1.56	5.48	1.55	.11, .65	.50**	2.77**	.24
COPE-Humour	3.21	1.14	3.57	1.48	.14, .59	.56**	3.26**	.29
COPE-Self-Distracton	5.35	1.46	5.50	1.50	-.13, .42	.42**	1.1	.09
COPE-Active Coping	6.24	1.29	6.20	1.13	-.25, .17	.49**	-.36	-.03
COPE-Denial	3.41	1.34	3.62	1.25	-.47, .05	.35**	1.60	.14
COPE-Instrumental	5.92	1.48	6.05	1.46	-.12, .37	.53**	.99	.09
COPE-Venting	5.25	1.49	5.36	1.36	-.16, .39	.39**	.84	.07
COPE-Positive Reframing	5.50	1.41	5.70	1.54	-.07, .46	.47**	1.45	.13
COPE-Planning	5.98	1.30	6.01	1.37	-.22, .26	.48**	.19	.02
COPE-Acceptance	6.48	1.22	6.29	1.26	-.43, .05	.38**	-1.60	-.14
COPE-Self-blame	5.38	1.44	5.19	1.33	-.45, .06	.46**	-1.53	-.13

* $p < .05$, ** $p < .001$, *** $p < .0001$.

Table 2 Outcomes in the self-help group pre and post intervention

Outcome	Before Self-help MBI		After Self-help MBI		95% CI for MD	r	t	d
	M	SD	M	SD				
WEMWBS	47.84	9.36	49.88	10.98	3.70, 3.81	.62**	2.44*	.23
SDQ-prosocial	7.56	1.70	7.64	2.16	-.28, .43	.53**	.44	.04
SDQ-internal	7.01	3.60	6.88	3.50	-.70, .44	.62**	-.45	-.04
SDQ-external	6.84	2.98	5.84	3.18	-1.58, -.42	.48**	-3.44**	-.32
DASS-D	8.41	8.23	8.72	9.04	-1.18, 1.80	.57**	.41	.04
DASS-A	12.40	9.45	11.69	9.20	-2.27, .86	.58**	-.90	-.08
DASS-S	15.05	9.09	14.53	11.24	-2.24, 1.21	.59**	-.59	-.06
Loneliness	42.30	11.08	42.60	11.80	-1.53, 2.13	.62**	.33	.03
COPE-Disengagement	3.33	1.19	3.53	1.36	-.06, .46	.39**	1.52	.14
COPE-Emotional support	4.90	1.65	5.16	1.63	-.04, .56	.50**	1.70	.16
COPE-Self-distracton	5.32	1.52	5.72	1.60	.09, .71	.42**	2.53**	.24
COPE-Self-blame	5.45	1.47	5.16	1.47	-.55, -.03	.54**	-2.17**	-.21
COPE-Humour	3.52	1.39	3.68	1.52	-.07, .40	.61**	1.37	.12
COPE-Active Coping	6.36	1.29	6.20	1.33	-.97, 1.06	.47**	.08	.12
COPE-Denial	3.53	1.52	3.69	1.49	-.12, .45	.48**	1.15	.10
COPE-Instrumental	5.91	1.52	5.72	1.58	-.50, .10	.45**	-1.32	-.12
COPE-Venting	5.37	1.47	5.29	1.45	-.36, .20	.45**	-.55	-.05
COPE-Positive Reframing	5.57	1.57	5.66	1.63	-.20, .39	.51**	.65	.06
COPE-Planning	6.18	1.35	6.22	1.36	-.22, .30	.46**	.33	.03
COPE-Acceptance	6.65	1.32	6.49	1.30	-.42, .11	.39**	-1.15	-.11

* $p < .05$, ** $p < .001$, *** $p < .0001$.

Table 3 Outcomes in the control group pre and post intervention

Outcome	Before regular class		After regular class		95% CI for MD	r	t	d
	M	SD	M	SD				
WEMWBS	46.12	7.65	47.24	9.25	-.22, 2.46	.64**	1.66	.15
SDQ-prosocial	7.50	1.63	7.10	2.14	-.74, -.05	.53**	-2.26*	-.21
SDQ-internal	6.53	3.56	6.60	3.20	-.48, .62	.61**	.25	.02
SDQ-external	6.21	2.98	5.79	2.89	-.83, -.01	.71**	-2.02*	-.19
DASS-D	7.93	7.15	9.38	9.12	.13, 2.78	.63**	2.17*	.19
DASS-A	10.80	7.80	12.38	9.93	.17, 2.98	.65**	2.22*	.21
DASS-S	13.62	8.21	15.25	9.54	.29, 2.96	.67**	2.41*	.23
Loneliness	41.75	11.51	42.05	12.55	-1.13, 1.73	.80**	.41	.04
COPE-Disengagement	3.29	1.20	3.58	1.33	.16, .61	.54**	3.42**	.24
COPE-Emotional support	5.09	1.55	5.28	1.48	-.10, .50	.45**	1.70	.12
COPE-Self-distraction	5.21	1.45	5.46	1.59	.07, .57	.33**	1.53	.14
COPE-Self-blame	5.40	1.49	5.20	1.60	-.52, .11	.37**	-1.28	-.12
COPE-Humour	3.35	1.36	3.77	1.47	.18, .67	.55**	3.36**	.31
COPE-Active Coping	6.16	1.29	5.95	1.27	-.44, .01	.53**	.32	.17
COPE-Denial	3.69	1.46	3.73	1.49	-.22, .29	.51**	.26	.03
COPE-Instrumental	5.89	1.48	5.76	1.47	-.43, .17	.40**	-.86	-.08
COPE-Venting	5.01	1.52	5.17	1.46	-.01, .42	.54**	-.10	-.11
COPE-Positive Reframing	5.51	1.52	5.55	1.44	-.27, .34	.39**	.23	.02
COPE-Planning	5.93	1.36	5.98	1.38	-.24, .34	.35**	.35	.03
COPE-Acceptance	6.33	1.19	6.15	1.22	-.44, .06	.35**	-1.48	-.13

* $p < .05$, ** $p < .001$, *** $p < .0001$.

Table 4 Mean differences in key variables between different groups M(SD)

	Taught group	Self-help group	Control group	F	p	Partial Eta-squared
WEMWBS	3.71(7.39)a	2.04(9.03)ab	1.12(7.32)	3.40	.04	.02
DASS-D	.36(3.06)	.16(4.04)	.73(3.63)	.76	.47	.00
DASS-A	.06(3.55)	-.35(4.25)	.79(3.84)	2.58	.08	.01
DASS-S	.11(3.50)	-.26(4.69)	.81(3.65)	2.20	.11	.01
SDQ-prosocial	.26(1.66)a	.08(1.92)a	-.39(1.86)b	4.11	.02	.02
SDQ-internal	.61(2.82)	-.13(3.10)	.07(2.30)	2.07	.13	.01
SDQ-external	-.26(2.78)	-1.00(3.14)	-.42(2.24)	2.44	.09	.01
Loneliness	-1.59(7.63)	.30(9.93)	.30(7.83)	2.06	.13	.01
COPE-Disengagement	.35(1.22)	.20(1.41)	.39(1.22)	.50	.50	.00
COPE-Emotional support	.38(1.56)	.26(1.64)	.20(1.64)	.66	.66	.00
COPE-Self-distraction	.15(1.59)	.40(1.69)	.25(1.76)	.68	.50	.00
COPE-Self-blame	-.19(1.44)	-.28(1.41)	-.21(1.73)	.88	.88	.00
COPE-Humour	.36(1.27)	.16(1.29)	.42(1.35)	.29	.29	.01
COPE-Active Coping	-.04(1.23)	-.16(1.35)	-.21(1.24)	.54	.54	.00
COPE-Denial	.21(1.48)	.16(1.53)	.03(1.40)	.63	.64	.00
COPE-Instrumental support	.12(1.42)	-.20(1.62)	-.13(1.62)	.23	.23	.01
COPE-Venting	.12(1.57)	-.08(1.53)	.16(1.43)	.44	.44	.00
COPE-Positive Reframing	.19(1.52)	.10(1.58)	.03(1.65)	.73	.73	.00
COPE-Planning	.02(1.37)	.04(1.40)	.05(1.57)	.99	.98	.00
COPE-Acceptance	-.19(1.38)	-.16(1.45)	-.19(1.38)	.98	.97	.00

Note. Values with different subscripts in the same row are significantly different from one another based on the post hoc analyses (LSD).

Table 5 Contents of weekly MBI courses and regular mental health classes

	MBI Contents	Homework	Practice	Regular classes (grade 7&8)
Week1	Introduction: What is Autopilot? Mindfulness eating: Raisin meditation	Booklet chapter1 habit releaser: Observe breathe	Body and breathe meditation	Grade7: Plan your day Grade8: Motivation
Week2	Understand your brain: why breathing helps us regulate tempers. Mindfulness vs mindless	Booklet chapter2 Habit releaser: walking Ten fingers	Body scan	Grade7: Be focused Grade8: My memory
Week3	Mindful awareness: Discussion: Why practice mindfulness? Searching for your leaves Mindful smelling	Booklet chapter3 Habit releaser: mindful watching tv Mindful eating	3 mins meditation	Grade7: Optimistic Grade8: My brain
Week4	Emotions: Discussion: previous, how food comes to your tables Owls' experiments Your understanding of emotions 3 characters of emotions	Booklet chapter4 Habit releaser: movie theater 3 mins meditation while you are waiting in lines	Voices and thoughts meditation	Grade7: Choose to be happy Grade8: Active thinking
Week5	Thoughts: ABC model Pink polar bear activity Link back with calm tempers Mindful walking	Booklet chapter5 Habit releaser: taking after a plant. Mindful listening: Familiar music and discovering sounds	Difficulties meditation	Grade7: Manage relations with parents Grade8: Make plans
Week6	Mindset Discussion: mindful listening ABC model Optimistic, Neuroplasticity (learned) Fix mindset, grow mindset	Booklet chapter6 Activities: Find your angles Meditation	Elected meditation	Grade7: How to make friends Grade8: Reasoning
Week7	Kindness and Gratitude Discussion: who is your helper? Why do we help and appreciate? Mirror neuron	Booklet chapter7 Habit releaser: happy thing Meditation	Loving and kindness meditation	Grade7: Stress Grade8: Social relations
Week8	Bring it to your surroundings. Bring it to your class, schools, community	Booklet chapter8	Elected meditation	Grade7: Happy studying Grade8: Relation with teachers

Chapter 6: Chinese Adolescents' Perspectives on Changes in Behaviour and Academic Achievement as a Consequence of a Mindfulness-Based Intervention

(Study Three)

This chapter contains the paper "Chinese Adolescents' Perspectives on Changes in Behaviour and Academic Achievement as a Consequence of a Mindfulness-Based Intervention", which has been presented at the British Psychological Society, Psychology of Education Section, and is under review by the Journal of Mindfulness.

Abstract

Students' feedback on what and how they changed after an 8-week Mindfulness-based Intervention (MBI) was studied among 552 teenagers (mean age = 13.03, SD = 0.50, 47.5% females) recruited from an urban Chinese private school, 184 in each condition (taught, self-help, and active control groups). Thematic analysis was performed on 115 written responses and 4 focus group interviews of the taught MBI group. A paired-sample t-test and general linear models were used to examine the change in academic achievement. Four themes, listed as no changes, state change, attitude change, and behaviour change, were identified. The themes aligned with the theoretical foundations of Mindfulness-based Cognitive Therapy (MBCT) as well as previous qualitative research on MBIs. The majority of students indicated that the intervention changed them, while a few indicated that they remained unchanged. It is possible that their high expectations for transformation or emphasis on academic outcomes may hinder their ability to identify their progress. Although quantitative data did not show that MBIs had a positive influence on academic achievement, some students ascribed their improved performance to this course. The benefits of techniques and cognitive change were emphasized in the process of behavioural change.

Keyword:

Mindfulness-based intervention, Adolescents, Behaviour change, Academic achievement, Mechanism

Chinese Adolescents' Perspectives on Changes in Behaviour and Academic Achievement as a Consequence of a Mindfulness-Based Intervention

Introduction

Mindfulness is one kind of meditation that teaches people to be aware of their feelings, thoughts, and to be open-hearted to the present (Kabat-Zinn, 2013). The Mindfulness Based Stress Reduction (MBSR) program was the first program developed for clinical application of mindfulness meditation and is widely used for a variety of illnesses such as depression, anxiety, and chronic pain. Later on, Mindfulness Based Cognitive Therapy (MBCT) was created combining the practice of mindfulness exercises from the well-established MBSR (Kuyken et al., 2013) and integrating elements of cognitive-behavioural therapy (CBT) for depression (Beck, Rush, Shaw, & Emery, 1979). The psychoeducational ingredients of CBT are about understanding automatic emotions, thoughts, and beliefs, as well as handling habitual and dysfunctional cognitive processes. Previous studies examined the impact of mindfulness-based intervention (MBI) on various psychiatric conditions, such as treating recurrent major depressive disorder (National Institute for Clinical Excellence, 2009), and releasing stress and pain (Kabat-Zinn, 2013). These positive evidence-based outcomes explain the passion for MBIs in clinical settings.

With the advancement of mindfulness research and a burgeoning awareness of social, emotional, behavioural, and academic challenges that school-age adolescents confront, increasing consideration has been devoted to incorporating MBIs into the education field (Schonert-Reichl & Roeser, 2016). The emphasis of work so far has still, following the tradition of MBIs, been on adolescents experiencing psychological difficulties. In fact, a recent meta-analysis not only found that selective mindfulness-based interventions (MBIs) had a positive impact on anxiety/stress, depression, attention, executive functioning, and mindfulness, but also revealed that universal MBIs have impacts on attention, executive functioning, and negative and social behaviour (Dunning et al., 2022). Specifically, challenging behaviours, such as inattention, aggression, and hyperactivity, were also found to be potentially regulated

through MBIs (Schonert et al., 2015).

Furthermore, MBIs exhibited a promising outcome in improved academic performance across various grade levels, from pre-K to high school (Caballero et al., 2019). For adolescents, one study indicated the effect size of MBIs on academic achievement and school functioning is moderate to high (0.32) from its meta-analysis. However, due to the small number of studies on academic achievement and school functioning ($k = 7$) were found, more studies are needed to confirm this result (Klingbeil et al., 2017). Despite the limited research, studies conducted on nonclinical Western students have demonstrated the positive potential of mindfulness in improving students' school performance. Albeit less extensive, studies conducted on regular Chinese adolescents have also revealed improvements in emotional control, personal growth, and behavioural problems in both taught and brief mindfulness interventions (Lam & Seiden, 2020; Lau & Hue, 2011).

Although the preceding quantitative studies have demonstrated effectiveness in improving adolescents' behavioural and emotional changes, fewer studies have attempted to explain the mechanism of these changes. The following concepts are mechanisms which have been identified and proposed by some researchers: observing, describing, acting with awareness, nonjudging of inner experience, and nonreactivity to inner experience were identified through factor analysis of existing mindfulness questionnaires (Baer et al., 2006). "Reperceiving", "decentering", "defusion" and 'meta-cognitive awareness" were terms that used to describe a process of intentionally focusing attention with openness and a non-judgmental attitude (Shapiro et al., 2006; Safran & Segal, 1990; Hayes, Strosahl, & Wilson, 1999; Teasdale et al., 2002). These previous premises of mindfulness were based on the quantitative analyses and expert opinions, but less is known about the experiences of those who have received mindfulness interventions.

Study of intervention mechanisms can contribute to a better scientific understanding of the processes that lead to therapeutic change, which can help therapists and program developers in strengthening MBI effects and modifying

treatment manuals, as well as promoting a better screening of individuals who could profit from the treatment (Segal et al., 2013). Qualitative studies, such as using open-ended techniques, or mixed-method study have been recommended as potentially contributing to the emergence of novel, previously undiscussed domains of psychological effects for MBIs or detecting the 'active mindfulness component(s)' (Grossman, 2019).

The theoretical premise of MBCT focuses on breaking up associative reactivation and developing a new way to handle automatic emotions, thoughts, and actions, enabling participants to become more aware of the activation of habitual emotions and thoughts and able to redirect attention away from dysfunctional emotions and thoughts with acceptance and self-compassion (Segal et al., 2002). According to the Differential Activation Hypothesis (DAH), reactivated negative thoughts and emotions increase depressogenic interpretation, which contributes to a depressive episode (Lau et al., 2004). A systematic review of 23 articles suggested that MBCT may function via some of its theoretically hypothesized mechanisms in the treatment of recurrent major depressive disorder (MDD). Specifically, mindfulness, rumination, worry, self-compassion, and meta-awareness were associators, mediators, or predictors of MBCT outcomes (van der Velden et al., 2015). However, the evaluated studies focused on the treatment of recurrent major depressive disorder. Therefore, more studies are needed to explore the causal specificity of the potential mechanisms of change in a nonclinical population.

Just like quantitative research, the majority of qualitative research on mindfulness has focused on marginalized populations, such as socially disadvantaged or HIV-positive young people. Moreover, there is limited qualitative literature looking at potential mechanisms in China compared to Westernized settings. Nonetheless, one qualitative study including 17 nonclinical young adults produced an explanation for how Western teenagers conceptualize their mindfulness experience (Monshat et al., 2013). They described their experience as from “overreacting” to “gain stability” and then “have clarity of mind and feel competent”. These findings corroborate earlier

qualitative research and the theoretical foundation of mindfulness, which is stated in the aforementioned publication as 1) the capacity to achieve a relaxed or peaceful state of mind. 2) capable of establishing a sense of agency in certain situations and resisting emotional control. 3) capable of changing one's perspective or gaining a greater awareness and acceptance of oneself and others, manifested as a change in perspective or increased awareness and acceptance.

Finally, although the main contents of MBI are consistent, the intervention in the current study implemented knowledge of neuroscience to empower students to further facilitate change. Although little is known about how neuroscience can be used to establish new teaching approaches, research has shown that teaching about the plasticity of the brain has a positive effect on motivation and academic accomplishment, particularly in math grades (Sarrasin et al., 2018). As a recent national experimental study discovered, a less than an hour online growth mindset intervention teaching pupils that the brain functions like a muscle that can develop and strengthen boosted the grades of lower-achieving teens by 0.10 points (Yeager et al., 2019). Thus, understanding brain plasticity may enable underachieving students to perform well. Similarly, advances in neural imaging research have shed light on the nature of emotion and the function of different brain regions. The amygdala-cortical functional connections alter dramatically around the age of ten, which is also a critical time for children to create peer relationships and develop social-emotional skills. Adolescents may experience incapacity to manage their emotions and a lack of resources to cope throughout this period. Knowing how the brain and emotions work may facilitate students in those challenging situations. However, no prior research has examined whether students' knowledge of emotion and brain science may aid them in modifying their feelings and behaviours.

Taken altogether, the current study aimed to obtain a better understanding of what kinds of changes Chinese adolescents experienced after MBI and how those changes happened through their own words.

Methods

Participants

The research was conducted between October and December 2020, with 552 students recruited from an urban Chinese private school (mean age = 13.03, SD = 0.50, 47.5 percent females). Permission from the school administration was obtained, as well as informed consent from the students. There were no eligibility requirements for participating in this study, as the course was designed for regular middle school students and the contents were approved by head teachers. Grades 7 and 8 were involved, with a total of 12 classes (6 classes each) randomly assigned to the control, self-help, or taught MBI groups. Each condition had the same number of students and comprised four classes (N = 184), two from each grade level. None of the students reported any previous mindfulness or meditation experiences in their questionnaires. All 552 students completed all eight sessions of the program, and 155 valid responses to open-ended surveys were received from the taught MBI group. This study was ethically approved by the institution and adhered to the British Educational Research Association (BERA) guidelines. Students had the option of not participating in data collection by not returning their questionnaires.

Procedure

This qualitative study was embedded in a comparison study examining the effective difference between the regular mental health class, self-help MBI and taught MBI. The first author offered the taught MBI as a free and innovative psychosocial support delivered to students over an 8-week period. The location was chosen because this school had a set timetable for a mental health course that MBI could readily substitute without interrupting the rest of the curriculum. This course was initially presented to the principal and headteachers (teachers in charge of classes) in the MBI conditions since their collaboration was vital to the course's success. The objectives and content of each session were displayed to aid comprehension and collaboration. Each class lasted 40 minutes, and the average group size was 45 for all three situations. The first author has a master's degree in mental health counselling and

prior mindfulness training experience, making her well-suited to carry out the study and dealing with any potential crises. Academic performance was assessed before and after the intervention. The qualitative data was collected using open-ended questionnaires from students in the taught MBI group after 8 sessions of classes. Finally, 16 students from the taught MBI condition were invited to 4 separate focus groups (4 per group) to further discuss how the programme had affected them.

Description of the program

This 8-week MBI training is a secular, face-to-face intervention for healthy youngsters planning to boost their academic performance without disrupting their regular curriculum. The training's overarching goals are to increase students' well-being, social-emotional learning, and peer relations. Table 1 shows the key subjects of three conditions. Each group consisted of 184 7th and 8th grade students who participated as class units.

Table 6.1 The main subjects of three conditions

	Daily meditation	Handout	Psychoeducation
Taught MBI	After lunch	Yes	MBI taught by the first author
Self-help MBI	After lunch	Yes	Original classes taught by their teachers
Control group	None	None	Original classes taught by their teachers

A mindful booklet was created based on the book "Mindfulness: The Practical Guide to Finding Peace in a Frantic World" (Williams & Penman, 2011), which was designed to teach readers to break the cycle of their negative feelings and emotions through mindfulness practices and CBT. The approval of usage and minor modifications to this book were obtained from the authors prior to the start of the study. The booklet adopted the contents related to student life and made slight adaptations to be adolescent-friendly (e.g., changed examples from workplaces to schools). Moreover, audio-guided meditation instructions and essential elements of CBT from the mentioned book were also integrated into this program, which followed

the adaptation of the suggested essential elements of MBPs in a previous study (Crane et al., 2012). The booklet was handed out to students in the self-help and taught MBI groups, and students were encouraged to read one chapter every week voluntarily. The Chinese audio guidance accompanied by the mentioned book was used in this study to guide these two group students' after-class practices during afternoon. Students in the control group had no practices or booklets.

In terms of mental health class sessions, students in the self-help MBI and the control groups had the original mental health classes taught by their teachers. The contents of the regular mental health curriculum are in Table 6.4. And the students in the taught MBI group had mindfulness-based classes delivered by the first author. The session content of this course was also mainly based on the book "*Mindfulness: The Practical Guide to Finding Peace in a Frantic World*. (Williams & Penman, 2011)". Psychoeducation consisted of 8 sessions (40 min each). The core elements in the book were supplemented with related knowledge of brain science and some activities from the Learning to BREATHE program (Broderick, 2013) to deepen students' understandings and facilitate the learning process. Permission to use the latter was also obtained from the author prior to the study. Finally, Mindfulness-Based Interventions: Teaching Assessment Criteria (MBI: TAC) (Crane et al., 2012) were also used to guide the teaching process during the sessions to ensure a combination of psychoeducation and first-person learning procedures.

Each psychoeducation session in this condition typically started with a discussion about students' thoughts regarding meditation practices and habit change activities over the previous week, followed by the introduction of new ideas, including the week's related theories, stories, and class activities. At the end, the facilitator provided an opportunity for students to ask questions and explain the homework. These psychoeducation sessions offered students a space to openly discuss their feelings and questions about their readings. This approach followed the framework of the original source book to retain core elements (Crane, 2012), although the delivery was formatted to suit the Chinese middle schoolers.

Measures

Academic achievement

As an overall score is better than a one-subject statistic (Sirin, 2005), Chinese, Mathematics, English, and Science, as the four core subjects in Chinese schools, were used to represent their academic achievement. A higher score indicates a better grade. Their final scores were summed up and standardized within the school. The overall score of their most recent tests before and after the intervention was requested from their school records.

Open-ended questionnaires and focus group

Students in the taught MBI group were invited to complete an open-ended questionnaire following their last MBI class. They were asked to explain any changes in themselves that occurred as a result of taking this course. Around 85% of students gave back their questionnaires, indicating willingness to share their data.

After reading 155 responses to open-ended surveys, four students from each class were asked to engage in focus group interviews to elicit additional details and a better understanding of their responses (see appendix G). Since the majority of students reported positive improvements following MBI, each focus group was comprised of three students who reported positive changes and one student who reported no changes. The interviews were done in a round-robin fashion to ensure that students with opposing opinions had an equal opportunity to present their reasonings. The first author facilitated the interview to help chosen students elaborate on their changes (e.g., could you say more about your changes?) and reason for their changes (e.g., what makes you change? Why do you think this course helps you make changes?). The first author, who is a native Chinese speaker, conducted all of the interviews in Chinese, making sure not to ask leading or biased questions.

Data analysis

The written responses (N = 155) and focus group audio recordings (N = 16) were in Chinese, and the analysis was conducted in Chinese with the support of NVIVO-12

(see appendix F). The topic for written responses is 1) what has changed after this course? and the topic for the focus group audio recordings is 2) how does this course make an impact or not make impact on those changes? The written responses were coded line by line first with the research question in mind. Data was coded independently first and then discussed during research team meetings. Emerging themes and subthemes were discussed at meetings, as were any disagreements. Inductive thematic analysis (Braun & Clarke, 2021) was employed to capture the themes and generate theories regarding the changes students made post-MBI. Previous studies illustrated their theoretical model of behaviour change before analysis. However, the current study conducted MBI in a new population, which may generate different pathways of change. Thus, the data coding process in the current study is data-driven without using a pre-existing coding frame (Clarke & Braun, 2017). Moreover, because written responses lacked detail, transcripts were utilized to supplement the written information and create a more comprehensive picture to explore further the issues discussed in the questionnaire responses. Finally, a Paired-sample t-test was used to measure the changes within groups and General linear models (GLM) were used for comparisons between three groups of changes of academic achievement.

Results

Open-ended questionnaire

Four themes, listed as state change, and attitude/belief change, and behaviour change, and no changes, described the changes of students after the 8-week MBI from open-ended questionnaires. Moreover, an exploration of why and why not MBI helps using both open-ended questionnaires and interview data also uncovered some key messages from the students' perspective. The following table lists the themes and subthemes identified in questionnaire responses with counted frequencies.

Table 6.2 Themes and subthemes identified about the change of students in the questionnaire responses.

Themes	Subthemes	Frequency
State change	Mindset: Pessimistic versus Optimistic	1 versus 12

	Physical state: sleepy versus energetic	1 versus 9
	Mood state: better mood, less stress	36
Attitude change	New knowledge/attitude of emotion	7
	Take care of yourself	9
	Understand others	12
	Awareness	19
Behaviour change	Express oneself and treat self well	5
	Better school performance	16
	Social relations	13
	Mindful life	11
	Emotion control	85
	Think before act	16
No changes	No changes	23

State Change

This theme includes overall changes in terms of their day-to-day state. State change includes mindset change, physical change, and mood change.

Mindset: Pessimistic versus optimistic

The first subtheme relates to a state change, which is a change of mindset. Although a person can be optimistic about one part of life while being gloomy about another, students mentioned this as a general attitude towards their lives. Only one student reported becoming more pessimistic after 8-week courses, while 12 students explicitly described themselves as being more optimistic. Moreover, although one student stated, "There doesn't seem to be much change, except maybe a little more pessimism," the further explanation was, "I learned about the structure of my brain, so I can have a positive result when I have a bad emotion. Furthermore, learning the "bystander effect" prevents me from feeling pessimistic about my efforts for others (S329, M)." (S stands for student, M stands for male, and F stands for female). The explanation seems to suggest that the student becomes more optimistic about having better consequences when facing emotional disturbance. Either way, that feedback supports the notion that MBIs have an impact on the fundamental mindset of students.

Physical state: sleepy versus energetic

This theme is associated with the noon meditation practice. Nine students reported that after their meditations in the lunch hour, they felt more energetic and better focused in their afternoon courses. Common reports were like this: "I feel relaxed and full of energy in the afternoon. It is very good. (S66, F)". Two students mentioned that they had a good sleep during the night after this training. Although one student had the opposite feelings and reported feeling sleepy, he also added that his work efficiency had improved: "The process of practice is very boring, and I often feel sleepy after practice. Before the course, my work efficiency was extremely low, but after the course, my mentality and work efficiency became much higher! Thank you very much! " (S244, M).

Mood state: better mood, less stress

Another highly frequent theme is a better mood state. Some students thought their mood became more relaxed and calmer: "feeling calmer and our mood getting better and better (S256, M)", and some of them as "less likely to be up and down (S244, M).

Attitude change

The second overarching theme is understanding/attitude change. The study discovered that the understanding of emotions changed several areas of students' lives, including their attitudes towards:

New knowledge/attitude of emotion

Many students described that their understanding of emotions had changed after the courses. Some students changed their attitude towards emotion through their new understanding of the nature of emotion. One student conveyed her changes from "believing that happiness is a positive emotion and performance" and "constantly seeking to eliminate negative emotions" to "finding that there was no good or bad mood." (S325, F). Another student stated, "The class on emotions really changed me a lot." "I was reluctant to express my true feelings, but do not emotions come and go

quickly?" She seemed to be able to talk herself out of a "dark" place: "This makes me more optimistic. Everything will be fine, right? So, you cannot live in the dark forever." (S337, F).

Other students benefited a lot from the brain science of emotion, which was also taught in the class. One student described how this knowledge helped him change his behaviours: "When I used to get angry, I was irritable and couldn't calm down. But now I know that is because my amygdala is not responding. I should give myself time and let my amygdala respond in a way that is beneficial to everyone. " (S341, M) Moreover, other students mentioned the prefrontal lobe in their answer: "I went from being an angry person to not being very angry. It is because of the brain class. Now, when someone makes me angry, I always think that my prefrontal lobe should be aware, do not be angry, and it really works! " (S323, M). A total of twenty-eight students mentioned their new knowledge about brain science in their feedback.

Taking care of yourself

Their attitude changes to become unjudgmental to their emotions and be kind to themselves: "Do not stay in that place and refuse to come out. Do not hide your emotions too much. Be kind to yourself and allow your body to relax and do what you love. " (S349, F). One student even concluded: "I believe you should be kind to yourself first, or you can't be kind to others." (S169, F)

Understanding others

Several students in the current study expressed how this course had made them more tolerant of others. Some students found that they could better understand others' emotions. "I learned that sometimes the other person's emotions are not necessarily what she really wants to express." (S335, F). And some of them believed that they could try to put themselves in somebody's position and become less aggressive in peer interaction. "This course let me learn to put myself in others' shoes, so I can understand other people's feelings " (S344, F)

Awareness

Several students expressed that this course had made them more attentive and more passionate about their lives, from noticing others' emotional changes to being able to capture the beauty of life. One student said that he was able to "notice his own emotional changes as well as the emotions of his friends" (S206, M). Participants believed mindfulness skills made them "notice little things in life and feel feelings that I had never felt before." (S214, F). And one student put it this way: "It makes me more observant and fully experience little things in life" (S165, F).

Behaviour changes

The third overarching theme is behaviour change, where students explicitly described their behaviour change after the course.

Express oneself and treat oneself well

The students described an enhanced awareness in terms of attending and expressing themselves: "I began to pay more attention to my inner thoughts, and dared to speak out my inner thoughts, even refusing some requests from others and overthinking others' emotions" (S255, F). Moreover, a student illustrated her change from "reluctant to express my true feelings" to being more "optimistic" (S337, M).

School performance

All sorts of improvements regarding the aspect of studying were mentioned by 24 students. Some students believed that they were less likely to get distracted. Many of these students reported that the meditation practice facilitated their ability to better concentrate in classes and do homework: "In each class, I can immediately get into the mood. I became less distracted and more immersed in the class. " (S241, F). Four students also narrated better work efficiencies, such as "finishing my homework faster" (S36, M).

Two students attributed their recent academic improvement to this course. However, the quantitative aspect of the academic grade did not support this. Based on data gathered both before and after the intervention, there was no significant change

in academic achievement in all three conditions; more detailed results are shown in Table 6.3. Furthermore, no significant difference was found between the three groups ($F(2,359) = .13$, $p = .88$, $\text{Eta-squared} = .00$).

Table 6.3 Outcomes of academic achievement in pre and post intervention

Outcome	Before		After		95% CI	r	t	d
	M	SD	M	SD				
Taught group	.03	.75	.03	.67	-.06, .07	.86**	.02	.00
Self-help group	.02	.70	.01	.60	-.08, .06	.84**	-.21	-.03
Control group	-.02	.74	-.04	.62	-.07, .03	.93**	-.85	.07

* $p < .05$, ** $p < .001$, *** $p < .0001$.

Social relations

Another overarching theme that students frequently discussed was improved interpersonal relationships. Some students thought they had become more friendly to their friends and even conducted more prosocial behaviours, which they attributed to their attitude change and class activities. Some students also found out that they have better relationships with their friends and families, such as more communication, having a good relationship with each other, and understanding each other better.

Improved prosocial conducts. Participants reported that they have recognized their changes in being able to be more friendly to their peers: "I can control my temper and be nice to my friends." Moreover, they also found that they were more prone to helping others than before: "8 weeks ago, when people needed help, I felt there was nothing I could do, but I know I will try my best." Furthermore, several students described how they had experienced happiness during their prosocial actions: "I helped my companion by giving her a notebook. She thanked me, and I thanked her, and she made me realize the joy of doing good, and it made both her and me happy. I benefited a lot. (S169, M)

Better peer relations and family relations. Students' behavioural patterns in terms of interpersonal relationships have changed: "Now I know how to be with friends and how to communicate with friends." Moreover, increased communication

between families is also reported by participants: "I used to have a bad relationship with my family, now I try to talk more with parents and share my true feelings."

A mindful life

After learning about mindful eating, observing, and moving, a large number of students reported using mindfulness in their lives. They became "more attentive and more patient to the details in life (S320, F)" and able to "feel unobserved emotion changes of friends" (S162, M), "experience the beauty of life (S227, M)". One student even labelled his changes as "from tired of life to now experiencing life (S227, M)".

Emotion control

Emotion control surfaced as a prominent theme, with more than half of the students reporting an improvement in regulating their emotions. They are able to regulate 1) their anger, 2) their agitation, 3) their distraction, and 4) their stress. Students used precise words to describe how their behaviour changed in response to their anger: "When I was upset, I used to hurl things and destroy things, and I couldn't control myself. However, after beginning this training, I've been able to control my anger through deep breathing and concentrate on my breathing." (F, S165). The other said: "It used to be so easy for me to indulge in unprovoked irritability. Now I know how to deal with it. " Similar to coping with mind wandering, students were able to "pull themselves back to the real world from the state of wandering." Furthermore, one student even wrote, "I try to be the master of my emotions instead of being controlled by them."

The topic of emotion regulation has two co-current subthemes. The first is new understanding/attitude of emotion, which is embedded within the attitude change themes. The understanding and use of techniques is another key component.

Techniques. The five-finger breathing method and mindful breathing were taught in the emotion classes. Students were instructed to imagine their five fingers as five mountains while tracing up a finger in the direction of inhalation and down a

finger in the direction of exhalation. Five-finger breathing was introduced, particularly to deal with the situation when students were feeling unable to control their anger. And mindful breathing was used when they needed to calm down, such as when feeling stressed during class or being unable to concentrate. Throughout the responses, students referred to several approaches given in class. 17 students described coping with negative emotions using five-finger breathing techniques or deep breathing.

Think before act

One change that several pupils mentioned is the ability to think before acting. This transformation occurs in a variety of settings throughout students' lives, such as while completing homework, confronting obstacles, or experiencing an emotional outburst. According to some students, they can "consider before rashly writing down an answer." (S237, M) Several students stated, "When confronted with challenges, I will not panic. Rather than that, I can regain my composure and consider the issue at hand. " (S165, F) Additionally, several students believed they could "think first" when they were "furious" (S210, M).

No change

Twenty-three students had reported "no changes" in their answers. However, thirteen out of twenty-three students appeared to make contradictory statements: they initially declared that no changes had been identified, but then proceeded to describe certain changes. Several examples include the following: "There is no change. However, mentally, I became more positive than I ever have. " (S63, M) "No changes, but may become calmer (S260, F)". The rest of the students were consistent with their answers. One student specified, "Nothing has changed. This eight-week course is designed to teach us how to control our emotions. I feel like I am still not in control of my emotions (S60, M). " More detailed feedback revealed in their interviews which was presented in the following "Why doesn't MBI help?" section.

Focus group

The preceding themes offered an overview of changes students perceived they made following the MBI. However, more detailed information was needed to understand the process of change they briefly mentioned in the open-ended questionnaires and to enhance and elaborate on the written data. During the discussion, some new information about how mindfulness helps or does not help was disclosed.

How does MBI help me?

The interview provided opportunities for students to elaborate on how MBI helps in much more depth. For instance, one student stated how she applied "shifting the attention to feet " to "shifting the attention to the lesson materials" (Group3, F2). Likewise, one student discussed how MBI benefits her social relationships. "I used to be quite concerned about what other people thought. When people give me an unintentionally dirty look, I dwell on it for a long time and blame myself. Now, I am inclined to believe that other people's feelings may not reflect their true thoughts. Later, I am able to talk to him calmly. " (Group 1, F2). The most often discussed topics in focus group interviews were "techniques" and "new understanding of emotion." Almost all students provided rationales for their positive changes through talking about how techniques like five fingers breathing and deep breathing, as well as new knowledge of emotions, helped them in distinct aspects of their lives.

Why doesn't MBI help?

Those who did not find MBI useful tended to state this candidly without further explanation in their written responses. Thus, some of those students were invited to participate in the focus groups to elaborate further. The focus group revealed that these pupils expected immediate and evident changes and were unappreciative of slow progress: "I became dissatisfied with the meditation practice. I see some modifications, but only a few. No significant improvements: occasionally, I was still unable to manage my temper "(Group 2, M1). Two students said that they felt something new for the first time. One student said attending to his emotions made him

realize that he "felt agitated all the time." (Group 3, M1), while the other felt "wired to redirect focus to the hands," having "never done it before." (Group 1, M1). Also, one student stated that he believed this intervention was for troubled individuals: "The reason I do not find this class useful is because I am constantly in a good mood." I do not pay much attention in class because it does not affect my grade, so I do not feel like I need to. You guys have bad tempers, which is why this is advantageous for you" (Group 4, M1).

Discussion

Students' changes following MBI were classified into four categories: state change, attitude change, behaviour change, and no change. Not only did these themes and subthemes reflect the theoretical premise of MBCT, but they also corresponded to similar themes identified in previous MBI qualitative studies on both clinical patients and non-clinical Western adolescents. Also, new themes found in this study provided other potential effects of MBIs.

Few qualitative studies have been conducted in either clinical or non-clinical populations, not to mention adolescents from non-Western countries. To highlight how the themes identified in the current study reflected existing research, findings here are contrasted with two of the few existing studies; firstly, a qualitative study conducted on patients with recurrent depressive symptoms (a clinical sample, as MBI was originally formulated for such populations) (Allen et al., 2009) and, secondly a study involving a non-clinical sample of Western adolescents (Monshat et al., 2013). Similar themes are provided on the same line in Table 4: Emotional control, Treat myself well, Improved social relationships, and New knowledge is evident across all three qualitative papers. In summary, all themes discovered in prior studies are present in this study, with the exception of "freak out" and "overreacting." "Freak out" and "overreacting" were themes of participants' unadaptive responses to challenges prior to the intervention. According to the data, participants in the current study indicated comparable characteristics in their feedback, such as "When I used to get irritated, I was impatient and couldn't calm down." As the current study focused

more on their post-intervention activities, these responses did not form a separate theme.

Table 6.4 Themes in the current study and in the other two qualitative studies

Themes in the current study	Themes in (Allen et al., 2009)	Themes in (Monshat et a., 2013)
Emotion control	Sense of control	“Conscious control”
Treat myself well	Valuing self	“Relaxing”
Social relation	Improved relationships	“Clarity of mind”
New knowledge/ attitude of emotion	Depression objectified/De-stigmatisation	“Conscious control”
Awareness	Discerning depressive relapse	
Using techniques.	Impact of activities /Take action	
No changes	Struggle	
Mindful life		“Confidence” and competence
State change		“Relaxing”
Think before act		
Better school performance		
		“Freak out” and “overreacting”

Interestingly, the struggle identified in Allen et al. (2009) in the second column is overlapping with no changes in the current study; comments such as having low willpower, poor time management, and expecting instant change emerged in this study. This finding is consistent with prior findings that MBIs are not panaceas for everyone. Furthermore, student comments indicated that the improvements brought by learning and practicing MBI may not be clearly discernible by students. Half of the students who wrote no changes followed up with a description of the changes. For example, "no changes, but may become calmer " (S260, F). Some adolescents appear to disregard emotional or mental changes as changes. Therefore, it is vital for the effectiveness of the training to teach students to recognize and credit themselves for slight changes, including small belief or thought changes.

In addition, an overall state of change was identified in both the Western and Eastern adolescent populations, but not in the clinical patient research. Prior qualitative research on MBCT in clinical patients confirmed, to some extent, that the process of transformation consists of a greater acceptance of depression-related feelings and ideas as well as the capacity to act or shift attention in reaction to adverse thought cycles (Allen et al., 2009). In fact, when caught in a bad mood, negative thoughts tend to result in depression relapse (Segal. et al., 2002). Therefore, a constant and relatively happy mood facilitates participants away from the reactive loop. A

more positive state of mind was clearly articulated in this study; as one student put it, "It helps maintain my mood from fluctuating" (S244, M).

Furthermore, non-clinical participants appear to be more likely to incorporate mindfulness into their daily lives; the theme of "mindful life" was identified in both Western and Eastern student populations, resulting in a greater sense of engagement with daily life and the ability to apply mindfulness to challenges. In addition, rather than "discerning depressive relapse," the adolescents in this study were able to distinguish and be aware of their anger, inattention, and even joy of life. This theme was also not found in the clinical patient samples. It seems people suffering from depression are likely to be preoccupied with applying what they have learned to their depression-related symptoms or situations, while nonclinical participants are more receptive to exploring other domains. However, it is also possible that the disparity comes from the research question posed in the clinical research was primarily concerned with participants' experiences with MBCT as a treatment for recurrent depression. Nevertheless, openly applying mindfulness in different aspects of one's life helps achieve an overall better mental state and keeping a stable mood state is vital for achieving general well-being for both the clinical and non-clinical population, as those who do so are less likely to return to the 'reactivated' loop of negative thoughts. Thus, encouraging clinical trial patients to apply mindful skills to other aspects of their lives may enhance the benefit of MBIs.

Mindfulness skills were not explicitly taught as academic-related resources, but students naturally incorporated them into their school lives. Although their grades did not increase significantly through data analysis, many students reported being "more concentrated in class," "more active in class," and "more efficient at completing assignments." However, this theme was not discovered in another Western research. This could be because previous research did not emphasize this feature, or because academic performance is particularly valued in Chinese culture (Setevenson & Lee, 1996). Despite the fact that not all quantitative research indicated a favourable effect of MBI on academic achievement, this finding from a qualitative perspective

demonstrates that the MBI positively changes academic-related behaviours. It is possible that more efficient studying habits may take some time to translate into better academic achievement.

Both an increased acceptance of negative feelings and thoughts and the ability to act or shift attention in response to adverse thought cycles were also found in the current study. The theme of improved emotional control was addressed 85 times in the responses from students. The main premise of MBCT, which believes non-judgmental acceptance of symptoms will lead to a reduction of such symptoms, was also revealed in students' descriptions. Previous studies revealed two subthemes of acceptance, which were destigmatisation from shared experience and depression, objectified from knowing "my thoughts do not define me", "thoughts are not fact" and "the emotion will pass." Similarly, in this study, students talk about "the emotion will pass" and "no good or bad emotion" before talking about their changed reactions. Combining these findings with the theme "New understanding" in the current study, it appears that by educating students to be non-judgmental of their emotions and reassuring them that emotions come and go, they were able to talk themselves out of the negative recurrence. Other than bringing up the new knowledge of emotion, students have frequently used "techniques" such as five-finger breathing in their responses to negative thoughts and situations. This demonstrates that after 8 weeks of mindfulness courses, students begin to actively use what they have learned in class, especially the techniques and new knowledge of emotion and the brain. It also provides teachers or practitioners with some potential ways to assist students to improve their behaviours or regulate emotions.

Limitations and Future Directions

This study analysed a large amount of open-ended questionnaire data in addition to in-depth interviews in order to acquire a full understanding of students' perceptions of their own changes following MBIs. However, it is important to note that although the qualitative feedback provides in-depth thoughts, the potential factors (e.g.,

techniques) and the outcomes (e.g., emotion changes) are based on the students' feedback and reports. Additionally, the data was only collected from one Chinese school; these elements limit its generalizability and ability to establish a clear and significant causal relationship. Furthermore, because this MBI combines components of mediation, psychoeducation, and brain research, it is difficult to disentangle the specific and non-specific factors that contribute to change. Thus, future studies could dissect different active components of MBIs in order to examine specific effects. Additionally, students reported descriptions of changes at the conscious level, while any unconscious change mechanism may need other measurements to be discovered.

Conclusions

The study examined students' views of change and the extent to which MBI benefits them following an eight-week mindfulness session. To the best of our knowledge, this is the first study examining putative MBI mechanisms in Chinese teenagers and comparing them with research conducted in Westernized contexts. The themes revealed in this study corresponded to the theoretical underpinnings of MBCT as well as previous qualitative studies on MBI, which means that the mechanism proposed in Western research also works for Chinese adolescents. Furthermore, new themes were identified as providing additional context for evaluating the effects of MBIs. Non-clinical participants seem to be more flexible in incorporating mindfulness into their daily lives. This encourages clinical trial participants to employ mindfulness skills in other areas of their lives, which may also boost MBI effectiveness. From students' perspectives, MBIs may have potential impacts on their academic performance. Techniques taught in class, as well as new cognitive beliefs regarding emotion and the brain, appear to help them a lot with their behavioural and emotional regulation. Overall, this study provides a clearer framework for future research to investigate the theoretical construct of MBIs or to further develop interventions, as well as practical suggestions for supporting students to regulate their behaviour.

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Table 6.5 Regular classes

Regular classes (grade 7&8)	
Week1	Grade7: Plan your day
	Grade8: Motivation
Week2	Grade7: Be focused
	Grade8: My memory
Week3	Grade7: Optimistic
	Grade8: My brain
Week4	Grade7: Choose to be happy
	Grade8: Active thinking
Week5	Grade7: Manage relations with parents
	Grade8: Make plans
Week 6	Grade7: How to make friends
	Grade8: Reasoning
Week7	Grade7: Stress
	Grade8: Social relations
Week8	Grade7: Happy studying
	Grade8: Relation with teachers

Chapter 7: Discussion and Conclusion

The overarching aim of this thesis is to provide a more comprehensive understanding of the relationships between well-being, academic achievement, and social skills in Chinese adolescents and to evaluate the proposed intervention, MBI, in improving these important developmental tasks as a whole. To this end, three empirical studies were conducted with results and discussions presented in Chapters 4, 5, and 6.

This chapter presents three research questions which arose from the literature review and answers with a brief overview of the findings from the three studies in order to frame the discussion that follows. Section 7.2 includes an extended discussion based on synthesizing findings from the three studies, followed by a discussion of overall limitations (Section 7.3). Section 7.4 lists the key contributions of this thesis and discusses the implications for both future research and practical development. Finally, Section 7.5 gives a conclusion of the thesis.

7.1 Research Questions and Findings

The research gaps and questions that were identified in the literature review were answered one by one in the three studies:

- Research Question #1: What's the relationship between academic achievement, well-being, and social behaviour in the context of Chinese peer relationships? More specifically, what kinds of students, in terms of their social behaviour and social status, would have the best academic achievement and well-being?

To address the theoretical gap, this thesis examined social behaviour and social status profiles in relation to well-being and academic achievement by deploying a person-centred analysis in a large sample of Chinese adolescents. **Study 1** utilized

latent profile analysis to identify naturally occurring behaviour-social status profiles with prosocial, aggressive behaviour, likeability, and popularity, and to further explore their associations with gender, school attended, subjective social status, academic achievement, and well-being. The 818 (aged 12–15 years, 46% girls) Chinese youth sample revealed four distinct groups: high aggressive-low likeability, low social status, average, and high prosocial-high social status. A bi-strategic profile (both high in aggressive and prosocial behaviour), which was found in the Western sample, did not emerge in this sample. The low social status and high-aggressive groups exhibited the lowest academic achievement and well-being, whereas the high-prosocial-high social status group displayed the highest well-being and academic achievement. Moreover, around 40% of students in this sample fell into the low social status group, which showed the lowest (along with the high aggressive group) likeability and the lowest popularity.

- Research Question #2: Could taught and self-help MBI be used in the context of Chinese middle school to improve students' well-being, academic achievement, and social behaviours?

To address the practical gap, this thesis evaluated the effectiveness of taught and self-help MBI in supporting Chinese adolescents' well-being and academic achievement in real-world settings and aims to offer more nuanced and contextualized findings with less interruption of the regular curriculum. **Study 2** addressed attention to the differentiated effects of taught MBI, self-help MBI, and regular mental health class conditions to see whether MBI could be potentially used in Chinese schools. A pretest-posttest design was used to assess the MBI for changing well-being, prosocial and difficult behaviours, coping strategies, loneliness, depression, anxiety, and stress level. Chinese students from 12 classes in a middle school participated during timetabled mental health classes in either the taught MBI group ($N = 129$), self-help MBI group ($N = 116$), or control group ($N = 117$). The study found the increase in well-being in the taught MBI group ($d=.51$) was significantly higher than in the

control group, but not for the self-help MBI group ($d=.23$). Both the taught and self-help MBIs excelled over the control group in cultivating prosocial behaviour. A significant decrease in loneliness ($d = -.21$) was only found after the taught MBI group, but internalising problems also increased. Finally, the three conditions had different effects on specific coping strategies and no significant changes in depression, anxiety, or stress. Furthermore, the self-help MBI and control group had a more substantial effect on decreasing students' externalising problem levels, but the same effect was not found in the taught MBI group. Finally, teachers' opinions on this intervention showed that the length and content were acceptable, but they believed it might not be conducive for all students.

- Research Question #3: How does MBI impact the behavioural change of students?

To better understand the effectiveness of MBI, this thesis further explored what kinds of changes Chinese adolescents experienced after their participation in MBI and how those changes occurred. The further qualitative study, **Study 3**, also looked at Chinese adolescents' perspectives on their changes after the MBI. The thematic analysis was performed on 115 written responses and four focus group interviews in the taught MBI group. Four themes, listed as "behaviour change", "state change", "attitude change", and "no changes", were discovered from students' feedback. "Better emotion control" surfaced as a prominent subtheme, with more than half of the students reporting an improvement in regulating their emotions. "Better mood and less stress" was the second popular subtheme revealed in this study. In the description of their behavioural changes, using techniques learned in the class as well as making cognitive changes were two emphasized subthemes. Although quantitative data did not show that MBIs had a positive influence on overall academic achievement⁵, some students ascribed their improved performance to this course.

⁵ Because students remain anonymous, it was impossible to cross-check individuals who claimed their performance had improved with quantitative data.

7.2 An Extended Discussions of Three Studies

At this point, key findings have been discussed within each chapter. This section contains an extended discussion based on synthesized findings across the three studies. Because Studies 2 and 3 are related aspects of a mixed-method project (Intervention evaluation) involving the same group of participants, combining their findings reveals additional information. As a result, the newly acquired knowledge from Studies 2 and 3 is presented first, followed by another discussion combining ideas from all three studies.

7.2.1 Combining studies 2&3

Studies 2 and 3 assist researchers in assessing whether this Eastern-born and Western-developed intervention, MBI, could be applied in Chinese middle schools with a focus on enhancing well-being, academic achievement, and social skills. These two studies are more closely related because they were designed under the mix-method project for evaluating the MBI using different methodologies. Together, Studies 2 and 3 form a triangulation, which helps increase the credibility and validity of research findings. Thus, when we look at results from Studies 2 and 3 together, a more in-depth picture of the effectiveness of MBI in Chinese adolescents is revealed.

In Study 2, the increases in well-being and prosocial behaviour were both found in the taught and self-help MBI groups. However, the three conditions had different effects on changing coping strategies, and no significant changes were found in depression, anxiety, or stress. Without collecting qualitative data in Study 3, it is easy to draw the conclusion that the effect of MBI on Chinese students' coping strategies or mental health was not significant. However, more than half of students ($N = 86$) explicitly described how they were able to use new coping strategies that they had learned in this course, such as breathing techniques, bringing awareness and cognitive changes (also see Section 7.4 for extended discussion). In other words, through their qualitative feedback, a large number of participants pronounced that they had changed

their coping strategies after the 8-week intervention. The inconsistent findings from qualitative and quantitative data might have come from the possibility that students could not categorize their behaviour change into different types of coping strategies. Or, as mentioned in Chapter 5, it's possible that the results are questionable because of the low internal consistency of some of the brief coping subscales and the fact that it's not clear what motivates each of the coping behaviours that were looked at.

Another discrepancy was the results of changing students' depression, anxiety, and stress levels after eight weeks of taught and self-help MBI practises, which contradicted many of its adherents' claims in previous research (Dunning et al., 2019). As illustrated in Study 2, without the knowledge from Study 3, there were two possible explanations of this result: 1) it is possible that MBI might be specifically effective for youth at clinical high risk (Semple et al., 2010); 2) there were floor or ceiling effects of DASS, as the participating students already had a positive baseline for their mental health indicators, making it hard to show a significant improvement. However, in Study 3, there was also a large number of students who reported that they had a better mood state and frequently mentioned that they had become less stressed. Moreover, they also mentioned they were less irritated or anxious when they explained how they had changed in describing their emotional changes. Thus, MBI certainly helps them in terms of maintaining a better mental health status, but it was not statistically significant⁶.

Similarly, as in Study 3, these two groups did not reveal a significant increase in terms of academic achievement, but qualitative studies showed that there were some positive changes in terms of students' academic and class behaviours after the intervention. Several students reported being "more concentrated in class," "more active in class," and "more efficient at completing assignments." It may take some time for more efficient study habits to materialize into improved academic

⁶ It is also possible that the qualitative data was unreliable, since students may tend to tell researchers what they wanted to hear. However, since the students in this study were reassured of their confidentiality and a group of students was able to report their negative feedback, I think the data derived from qualitative feedback was more likely to be credible.

performance. This situation could be explained by the previous meta-analysis studies, which found that the effectiveness of educational interventions had higher effect sizes on the near transfer of the task learned (self-developed tests) than intervention-independent tests on the further transfer (e.g., de Boer et al., 2014). Improved academic achievement is a further transferred quality for MBI to develop, thus it may take longer to manifest. All these three sets of disparities in combining qualitative and quantitative data showed that qualitative feedback could reveal some details that were hard to capture in quantitative data, which may be especially important for evaluation, as most of the time the change and improvement are not statistically significant or need more time to materialize. More discussion of the implications can be found in Section 7.4.

While the taught MBI group had a greater impact on changes in well-being and prosocial behaviour, as well as better results in reducing loneliness and increasing emotional seeking, this group also had more internalising difficulties. This result requires further discussion in relation to its qualitative data feedback. It is interesting that one male student shared during the interview that he could now feel his emotions, which he had never attended to before. Studies have found that Chinese students are more likely to use expressive suppression coping strategies than their Western peers (e.g., de Boer et al., 2014), so, it is possible that some Chinese students were suppressing their emotions prior to MBI. Furthermore, a mindfulness study on Chinese students found that a high level of mindfulness was associated with less emotional suppression and higher subjective vitality (Wu & Buchanan, 2019). Thus, it is possible that students in this study become more aware of and willing to admit their emotions after weeks of MBI, like in a previous study where participants reported increased awareness of emotions in a Western adolescent sample (Allen et al., 2009). Thus, an increased internalising problem found in the taught MBI may be the result of the increased awareness of emotion after the MBI. More studies are needed to confirm this explanation.

Furthermore, qualitative findings suggested that MBI receptivity may vary by

gender. This study randomly invited students who expressed negative or no changes (N=24) in written responses to the interview groups, and all four invited students happened to be boys. Given that the probability of randomly selecting boys four times is 6.25 % ($0.5*0.5*0.5*0.5$), it is safe to assume that there are more boys than girls in the group of no changes. In the interview, one male student stated unequivocally that he disliked the feeling of being aware of his emotions. Another male student believed that this course was useless for him because he did not have emotional issues like girls who had issues and found it beneficial. Indeed, disapproval of gender-role violations is more profoundly applied to boys than girls, making them more reluctant to show "feminine" traits like talking about or admitting feelings and emotions (McCreary, 1994). As a result, it is possible that males, particularly boys, were less receptive and motivated to attend classes discussing their emotions. However, understanding emotions is important in schools because it allows pupils to engage with the world in meaningful ways (O'Toole & Simovska, 2022); thus, it is critical for schools and teachers to think about how to teach emotions.

The previous finding echoes the belief of researchers who indicate that the mechanisms for females may operate in a way consistent with the general model of mindfulness, while the predictors of benefit for males may differ from those often defined for mindfulness (Kang et al., 2018). This study indicated that after mindfulness training, gains in self-compassion were solely connected with improved affect in females, but not in males. The general model of mindfulness that targets self-criticism is particularly beneficial for female participants, as studies have found self-criticism tends to be more common among female youths than male youths (e.g., Calvete & Cardeñoso, 2005). In light of Study 1's result that boys in Chinese middle schools are more likely than girls to fall into two more maladaptive groups, greater attention must be paid to the male population in schools. With MBI, female adolescents could benefit from mindfulness in terms of increased self-compassion; however, the predictors of benefit for male adolescents may not be the predictors often indicated for mindfulness. Hence, interventions pertaining to social-emotional

skills may require greater consideration for the needs of male students. Section 7.4 delves deeper into the implications.

7.2.2 Combining the three studies

When combining the three studies together, more knowledge is revealed and is best treated under three headings: the importance of social skills, the effect of class size, and the relationship between academic achievement and well-being.

The importance of social skills. The results found in Study 1 emphasize the importance of prosocial behaviour in Chinese peer relationships. It was revealed that the absence of aggressive behaviours alone is insufficient to reach full-scale (likeability and popularity) high social status in Chinese middle schools; it must be accompanied with a high degree of prosocial behaviours. Furthermore, adolescents with the highest level of prosocial behaviour, lowest level of aggressive behaviour had the highest levels of well-being and academic achievement. In other words, students who perform at a high level of prosocial behaviour would be more likely to fall into this high prosocial behaviour, low aggressive behaviour and high social status group that exhibits the best well-being and academic achievement outcomes. This result echoes previous literature, both in Western and Eastern contexts, which found adolescents' prosocial behaviour has been positively linked with academic success and well-being (e.g., Caprara et al., 2000, Masten & Cicchetti, 2010). Furthermore, the study's emphasis on prosocial behaviour in achieving a high status of peer relationship reflects the Chinese cultural norm of kindness and adversarial attitude toward conflicts (Chen et al., 2006). In all, this result supports the developmental cascading effects of prosocial behaviour on adolescents' well-being and academic achievement.

In this context, MBI, which promotes prosocial behaviours may be a promising strategy for enhancing school adjustment among Chinese adolescents, particularly for the group labelled "low social status" in Study 1. This group has previously gone unreported by academics and practitioners because it was discovered for the first time

among Chinese adolescents, who make up 40% of the participants in this Chinese sample. This huge number of pupils may not be able to be recognized by universal mental health screening in schools (assuming these schools offer one), as a poor state of well-being does not necessarily indicate mental health difficulties. They may require a more specialized or targeted screening to be identified. However, as described in Chapter 4, this large group of students needs special care since it was a moderate version of the high aggressive group and had the lowest well-being and academic achievement.

This group of students may benefit from the capacity for increasing prosocial behaviours identified in Studies 2 and 3 using a universal MBI approach, which in turn promotes school adjustment. In Study 2, the taught and self-help MBI groups had considerably greater increases in prosocial behaviour than the control group. Aside from that, the qualitative results of Study 3 revealed that half of the students reported being able to better manage their emotions after finishing the 8-week MBI classes, allowing them to be nicer to their peers and understand their perspectives. These findings support the idea that MBI could also be used to prevent this group of students from becoming high aggressive group students, especially given the difficulties in identifying these students in classes and tailoring treatments for them. The same impact may also apply to students in the average group, as prosocial behaviours can help students progress from the average group to the high social status group. More discussion of the implications is listed in Section 7.4.

The effect of class size. Furthermore, the discovery of this less visible group—the low social status group—urges academics to investigate the potential impact of class size on academic achievement and well-being. Study 1 found this low social status group resonates with the "neglected group", which has been categorized in sociometric status studies as a group of children with low visibility who are neither liked nor disliked by their peers (van der Wilt et al., 2018). Due to large class sizes and student-faculty ratios in Chinese junior high schools, as stated in Chapter 4, this group may be overlooked not only by research but also by their teachers. The average

class size in participating schools was 47, which is a standard number in Chinese classrooms but significantly bigger than in other countries (OECD, 2012). Students in this low social status groups who are silent, possibly reserved, are ignored by their peers and teachers to some extent and might have gradually internalised the belief that their opinions are insignificant. The same pattern was observed in students in Study 3, where students reported no change in their questionnaires but were able to open up and express significantly more of their unique opinions when asked to participate in the focus group interview with only four of them. It revealed that, in a much larger group, students were either hesitant to share their genuine feelings or believed their ideas are insignificant, so that they responded in short, meaningless sentences. This was also corroborated by a recent study in China, which discovered low student participation in high class size classroom practise (Li & Li, 2021). Thus, the opportunity for voice must be provided, especially for the marginalized group, in order to disclose their honest viewpoints (Freire, 1974).

The debate between practitioners who believe that larger classes damage teaching and learning, and policymakers and academics who believe that class size is insignificant remains unresolved. Previous Western studies concluded that, other than class size, the most key factor determining student achievement is the instructor, so reducing class size is not cost-effective (e.g., Hanushek, 2011; Rivkin et al., 2005). More studies have been conducted on this topic in China. However, researchers have not yet reached a conclusion on the relationship between academic achievement and class size in China (An, 2019; Zheng, 2020). In fact, researchers noted, it is alarming that there are no specific studies of class size and student outcomes currently or recently conducted in the United Kingdom, the United States, Australia, Canada, or New Zealand (Blatchford & Russell, 2020). Besides there not being enough studies looking at the relationship between class size and outcomes like academic achievement, few studies have been undertaken to study the relationship between class size and well-being. With the standard large class size in Chinese schools, it may be more essential for Chinese schools to consider this problem, but it also serves as a

reminder to educators and policymakers worldwide to consider the impact of class size on well-being, not only for academic achievement. Section 7.4.1 goes into greater detail regarding the implication.

The relationship between well-being and academic achievement. Examining the three studies together provides further information about the relationship between academic achievement and well-being. Based on the findings of this thesis, I believe that well-being and academic performance are not on opposing sides of a seesaw, with one rising and the other decreasing. Instead, they have the potential to rise together. To begin, the findings of Study 1 corroborate this claim by indicating that the three distinct behaviour and social status groups displayed both high and low levels of academic achievement and well-being (in the same direction). More specifically, the low social status and high-aggressive groups had the lowest academic accomplishment and well-being, whereas the high-prosocial-high social status group had the highest academic achievement and well-being. It is probable that, from a person-centred standpoint, the level of well-being and academic achievement go hand in hand, at least in the Chinese adolescent sample. This finding echo and supports the notion that a school can have more than one aim, and that two goals, well-being and academic achievement, can be cultivated concurrently (e.g., Clarke, 2020). Moreover, the findings of Study 2 also revealed that the level of well-being improved after the 8-week MBI, and academic achievement, while not significantly increased, did not fall as the trade-off relationship predicted. Thus, the relationship between well-being and academic achievement in these samples doesn't show a "trade off" trend. Section 7.4 covers related implications in greater detail.

7.3 Limitations and Future Directions

Specific limitations relating to each paper have been illustrated in previous chapters. This section tackles additional constraints not previously stated in the chapters and concerns that are common to the three studies, followed by suggestions for further research. Section 7.4 covers additional discussion on the implications from

key contributions and future research and practice direction.

First, even though the thesis holds a cross-cultural perspective which compares the outcomes with existing research results in other cultures, all the current studies were carried out in China without the inclusion of a comparison group from other cultures for direct cross-cultural comparison. The current study's findings were consistent with Chinese culture's strong and pervasive emphasis on academic success and prosocial behaviours, but it is unclear whether the findings might be generalized to teenagers from other cultural backgrounds. Although this research with Chinese samples was able to show the circumstances in a non- WEIRD context, investigations in other societies, particularly under-represented places, would be needed to further understand the similarities and contrasts between teenagers from different cultures. More rigorous cross-cultural research is required to determine what is unique to one culture and what is universal to all humans. In sum, more cross-cultural studies in terms of studying measurements, conceptualisation and translations were needed to facilitate the distinction between universal and culture-specific characters.

As the research questions were about what schools could provide students, this study was centred on the school context and peer relationships within it as part of an eco-system as a site where teenagers spend a significant amount of time. Family-related factors, which are an important developmental framework for adolescents' social and psychological adjustment, were not included in this study. According to Bronfenbrenner's ecological model (1979), family is another key system for teenage development, and it has been shown to play an important part in Chinese culture as well (e.g., Wu & Tseng, 1985). One study shows that the higher the importance of family values in a culture, the lower the positive impact of peer acceptance on adolescents' life satisfaction (Schwarz et al., 2012). Moreover, researchers also suggest including parents in MBI training to boost its effectiveness (Ford, 2019). Given the significance of family in Chinese culture, it is possible that family influences the positive effect of peer acceptance on Chinese adolescents' well-being. Due to different research goals and limited resources, this element had to be excluded

from this study. Future research should integrate both family and school factors into the same model to gain a deeper understanding of how both domains influence students' well-being and academic achievement.

Moreover, the current study only collected data on the teenagers' perceived socioeconomic status, as it was challenging to collect data on their objective socioeconomic status in this study. It would be more interesting to include both subjective and objective SES to fully understand the relation between SES and adolescents' development. For example, the study in Appendix A gathered more demographic information and discovered that homeownership has a strong predictive effect on Chinese people's well-being. More research is needed to gain a complete picture of adolescent development and to better understand the impact of SES on Chinese adolescents' psychological, academic, and social development. Overall, future studies should look into broader contextual factors that may have an impact on those areas in order to develop a more robust model for explaining and understanding adolescents' well-being, academic performance, and social interactions.

Finally, a potentially confounding issue may need to be addressed as MBI and control classes were taught by different teachers. Varied instructors may produce a different class environment, which would influence the 8-week course outcome in addition to the hypothesized course context effect. This limitation was hard to overcome in this study since the two instructors did not know each other's courses well enough to allow one instructor to teach two courses. It might be feasible to include the possible confounders as control variables in the regression models to separate the impact of the independent variables, but it was not suitable for this study. Even though the current study is the optimal way to use the resources available, future studies could rule out this confounder by hiring appropriate instructors. Moreover, future studies with bigger teams and more resources could involve analysing students' changes from peers' and teachers' observations as well as further integrating family into change-making.

7.4 Theoretical, Practical Implications, and Future directions

Despite the limitations described above, the current thesis has made substantial contributions to existing knowledge and practice in a variety of ways. The present study is the first of its kind to examine academic achievement, well-being, and peer relation in the same model using a person-centred approach. To some extent, it clarifies the tangled relationships that could not be explained in the traditional variable-centred approach. Moreover, Chapters 4 & 5, as well as previous discussion (Section 7.2.1), indicate that MBI could be used in Chinese middle schools to improve well-being, academic achievement, and social skills altogether. With specific discussions and implications having been presented in the previous chapters, the following section illustrates the key contributions of the thesis and their implications for future research and practice.

7.4.1 Academic achievement, well-being, and social skills

The thesis brings awareness to the importance of academic achievement, well-being, and social skills in Chinese adolescents (see Section 7.2.2). First, the findings of this thesis suggest that social behaviours, such as prosocial and aggressive behaviours, play a significant developmental role in determining the membership of groups with varying levels of well-being and academic achievement. Considering the cultural emphasis and developmental significance of prosocial behaviour, which have been extensively discussed in both theoretical and practical studies (e.g., Martela & Riekk, 2018), this thesis further suggests that prosocial skills can be explicitly addressed in future interventions in order to further promote students' well-being and foster academic performance in schools. Additionally, by enhancing their prosocial behaviour, it is possible to keep at-risk students from engaging in aggressive behaviour which could have long-lasting effects on their future development. As the norms of society and classrooms strongly affect students' behaviour (Terry & Hogg, 1996), it encourages Chinese schools and teachers to

promote prosocial behaviours in creating a benevolent school and class environment. Although aggressive behaviours were not well received by Chinese students in this study, forefront researchers recommended a positive and destigmatized attitude toward troublesome emotions and behaviours (O'Toole, 2019). Lastly, additional longitudinal research on how prosocial behaviour influences the development of teenagers is required to adequately establish its effects.

Furthermore, this thesis addresses the importance of investigating the relationship between well-being and academic achievement in order to provide more solid evidence to change the existing notion of a trade-off relationship between academic achievement and well-being (Clarke, 2020). This thinking is also corroborated by the teachers' feedback in Study 2, where teachers expressed concerns that practicing MBI would take away time that students could use for schoolwork, potentially harming their grades. This idea also impedes schools' efforts to promote their pupils' well-being, as if investing in well-being would severely affect the academic achievement of students. Future research could use well-being and academic achievement as profile indicators to better understand how these two variables interact within individuals in a more explicit way. Moreover, this thesis also found that well-being and academic achievement showed a promising trend to be improved together through MBI integration with the contents of social emotional learning and brain science. Though more research is needed to confirm the relationship between well-being and academic achievement among adolescents, the thesis findings suggest that Chinese schools and teachers consider well-being as one of their teaching objectives.

Another contribution of this thesis is to refocus attention on the issue of class size. Both statistical analysis and student behaviour in these studies revealed similar negative trends, which may be attributed to the large class sizes in China. According to researchers, the emphasis on the relationship between class size and attainment is misleading, and further research into its interactions with class, teaching, and peer relationships is needed (Blatchford & Russell, 2020). In this thesis, the potential harm

of large class sizes on Chinese students' peer relations, well-being, and motivation to participate has emerged. It builds on the previous premise by urging that future research investigate the relationship between class size and well-being, particularly as more and more scholars push for schools to prioritize well-being (OECD, 2015).

Furthermore, Biesta (2009) stated that one goal of education is "socialisation," which assists students in establishing their identities in relation to existing roles in their context. This negative tendency of students being hesitant to express their opinions or less motivated to engage should urge schools to assess whether the big class size would impair the school's socializing purpose. Finally, middle school teenagers are subject to China's compulsory education policy, which implies this large class size could be due to a financial consideration. This invites Economists in the education field to investigate whether class sizes of up to 50 have such a negative impact on education that financial concerns must be set aside. At the same time, it is critical to investigate any intervention that could facilitate and fit well with China's big class size scenario in order to meet the needs of pupils.

7.4.2 Intervention development

In addition to the previously mentioned implications of addressing prosocial behaviours, there are several other key implications that could benefit in the continued development of MBI for Chinese teenagers, which may also apply to the development of general interventions.

Implications in intervention design. Studies 2 and 3 have demonstrated that MBI can be introduced into Chinese classrooms without requiring changes to the existing curriculum, the division of administrative classes, or the hiring of expert mindfulness trainers. Both the taught and self-help formats showed positive benefits on mental health well-being and prosocial behaviours when administered in a Chinese classroom setting, supporting their potential application in Chinese schools with adequate monitoring. China's interdependent culture may give fertile ground for this Eastern-born and Western-advanced intervention to take root, as its effect on prosocial

behaviour may be more applicable in such a culture. Self-help may be a more effective and realistic method of implementing MBI in Chinese middle schools with limited resources, as students in the self-help group received similar benefits to those in the taught MBI group, while also appearing to experience fewer possible negative effects. More research is required to determine the causes of increased internalising difficulties following the taught MBI (also see Section 7.2.1). In addition, a large-scale study is necessary to conclude that self-help MBI is preferable to taught MBI for Chinese schools, with additional outcome measurements.

Aside from potentially addressing prosocial behaviour, components for increasing academic achievement may be considered for intervention development in China. The significance of academics in Chinese culture and education has previously been extensively discussed (see Section 2.2.1). The same subject is validated in this study, based on feedback from both teachers and students. As described in Study 2, several teachers were worried that this course, particularly the practices, would disrupt students' study routines because their lunch break was generally used to complete schoolwork and that it could have a detrimental impact on students' academic lives. Several practical implications for implementing MBI in China could be generated from these results. First, researchers need to prepare to receive dissenting voices when there is widespread adoption of MBIs in academic-oriented institutions. Second, intervention designers should focus on how to make academic transformation more significant and lasting. A whole-school approach has been widely agreed to be more successful than a curriculum “add-on” for school-based mental health programs (O’Toole, 2017). Thus, future MBI in schools or other interventions for Chinese adolescents may consider including components to improve academic achievement in order to better motivate instructors and schools to develop it as a whole school approach.

Although various studies have established the value of qualitative research in understanding interventions, publications from mixed-methods intervention evaluations typically lack evidence of the integration of qualitative research and trial

data (e.g., Lewin et al., 2009; O'Cathain et al., 2013). The current study combined the findings from Studies 2 and 3 to produce a more complete picture of student change (see Section 7.2). For example, while the results of Study 2 did not show a significant increase in students' mental health state, the qualitative results of Study 3 clearly showed that a large number of students reported having a better mood and less stress. These results highlight that qualitative results could capture more subtle changes that could not be captured through quantitative measures. As a result, this thesis recommends that future intervention evaluations use qualitative data as an outcome measure rather than only as exploratory tools.

Furthermore, Section 7.2 discussed how students were hesitant or unmotivated to provide feedback in written responses but were able to open up during small group discussions. This implies that, even for qualitative studies, researchers must design the project in such a way that participants have enough space and openness to express their true opinions. This idea of inclusion echoes what Paulo Freire called “conscientisation” where marginalized groups should reveal reality in their own way instead of having it explained by experts (Freire, 1974; O’ Toole, 2017). Moreover, according to the findings of Study 3, a large proportion of students who reported no changes were boys. This is consistent with previous research, which found that males are less receptive to MBI than females (e.g., Kang et al., 2018). However, Study 1 results also revealed that boys were more likely than girls to fall into the low social status and high aggressive-low prosocial groups. These address the need for intervention developers to consider male students' needs by tailoring interventions to be more male-sensitive in order to make interventions more inclusive and cost-effective. Furthermore, if students are hesitant to practise or learn MBI, it is critical to have a protocol or additional resources available to them. Overall, these results show how important it is to include qualitative data in research design and take the needs of different target groups into account.

Implications in understanding behavioral change theories. The experiences described by students about what parts of and how MBI change their behavior align

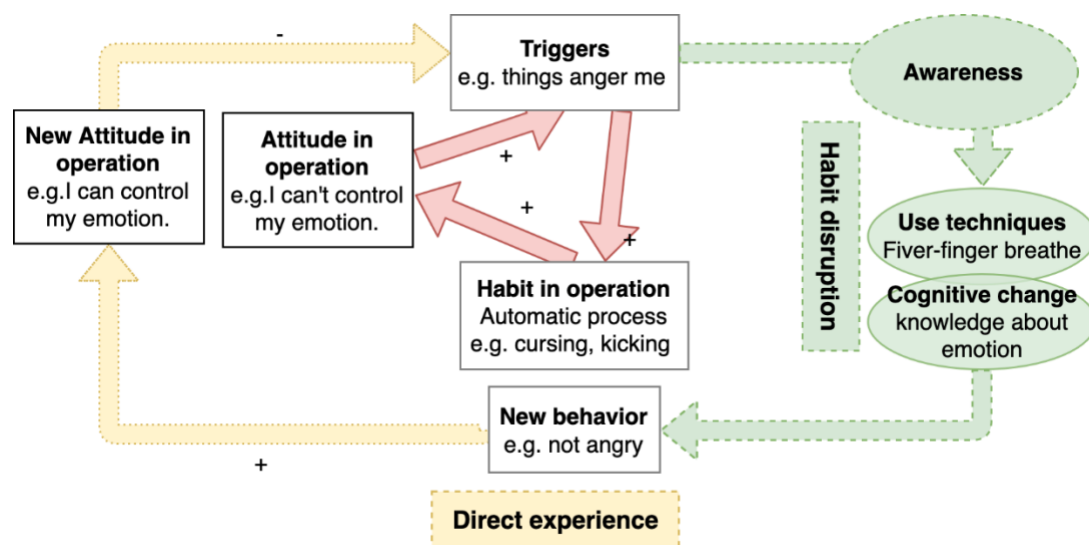
with several mechanisms identified in the previous literature. First, the strongest thesis “emotional control” reflects the “self-management” and “nonreactivity to inner experience” as identified by Baer (2003) and Baer et al. (2006). The students' reported "new knowledge/attitude of emotion" aligns with the "cognitive change" (Baer et al, 2006) and "insight" (Brown et al., 2007) resulting from a decentered perspective. "State change" relates to the key mechanism of “relaxation” identified by Baer (2003) and the improved “mind-body functioning” as suggested by Brown, Ryan, and Creswell (2007). Additionally, "thinking before acting" is associated with the "integrated functioning" process identified by Brown, Ryan, and Creswell (2007) and the "decentering" or "reperceiving" processes described by Fresco et al. (2007) and Hayes et al. (1999).

The potential behavioral change process revealed in Chinese adolescents' feedback after an 8-week MBI resonates with existing behavioral theories, which offers insights to practitioners on how to understand theories and apply them to classes. MBCT incorporates aspects of cognitive behavioral therapy (CBT), which emphasises the regulation of habitual cognitive processes and suggests the disruption of associative reactivation as well as the development of a new approach to manage automatic emotions, thoughts, and behaviors (Segal et al., 2002). The participants' experiences of behavior change in this study are also well reflected in the three axioms (Intention, Attitude, Attention) of mindfulness, which are interwoven elements of a cyclic process (Shapiro et al., 2006). This is evident in the students' reported experiences, such as one student saying, I was reluctant to express my true feelings, but emotions come and go quickly. This makes me more optimistic. Everything will be fine, right? So, you cannot live in the dark forever" (S337, F). This student intentionally attended to her "true feelings" with an open and non-judgmental attitude (emotions come and go), leading to a reperceiving process where she realized her autonomy.

In addition, it echoes the proposed schematic model of the relationship between attitudes and habits (Verplanken & Orbell, 2022) and the process model of emotion

regulation presented by Gross (2015). Based on the integration of research on behavior, habits, and attitudes, the study found that attitude change is a significant starting point for behavior change. When a habit is disrupted, there is a transition from habit-driven behavior to attitude-driven behavior (Verplanken & Orbell, 2022). Both emotional and behavioral 'reactivated' loops are habit-driven, as they do not involve deliberate thinking before action. In their schematic model of attitudes and habits, the transition from habit-driven behavior to attitude-driven behavior was simply explained through habit disruption. The results found in the current study offer a possible avenue of transition that may elaborate that part of the model (Verplanken & Orbell, 2022; see details). Figure 7.1 uses the emotion control process found in this study as an example to show how MBI helps students regulate their temper.

Figure 7.1 The potential pathway of behaviour change using emotion control



Through the example of the emotion control process commonly described in students' feedback, the potential pathway of behaviour change has been revealed. When there is no intention of change, the reactions to a trigger follow the red pathway. When an alert is displayed, it causes the associated habits to emerge, such as emotional outbursts, bad language, or even aggressive behaviours. The reactions of students when facing a triggering situation are typical of habit-driven behaviours where students respond to this situation without deliberate thought. And repetition of

these reactions makes one more vulnerable to stimuli, as Hebbian learning might connect neurons to become engrams (Keysers & Perrett, 2004), which also in turn reinforces the negative attitude towards this situation. Without habit disruption, this red path gets stronger and more stable.

After an eight-week mindfulness program, focus group interviews and written responses highlighted another potential way, the green itinerary. Both used techniques and learned knowledge are critical components in assisting students in transitioning from habit-driven to attitude-driven behaviour. As previous research has also revealed that non-specific mechanisms such as psychoeducation can play a vital role in MBCT's therapeutic effect in nonclinical populations (van der Velden et al., 2015), the techniques and knowledge that students learn during psychoeducation may help them the most. In Verplanken and Orbell's model, this mindfulness training worked as a habit disruptor to interrupt the habit in operation as both breathing techniques and knowledge about emotions were brought up in students' feedback. The new experience of being able to control their emotions led to the yellow path illustrated in Figure 7.1, which also helps people change their negative self-perceptions or attitudes towards a new attitude-driven behaviour based on their belief in being able to control emotions. Overall, the green and yellow paths can be used to understand how students control their emotions after MBI, and the red path can be used to show how students behaved before MBI or with no plans to change.

Moreover, this process also echoes Gross' (2015) process model of emotion regulation, which illustrates strategies individuals use in the emotion-generating process at different points. Several stages, such as attentional deployment, cognitive change, and response modulation, were introduced in Gross's model in line with the emotional change that students illustrated after an 8-week MBI.

First, students were able to manage the allocation of attention, which, as reported previously, assists individuals in forming new goals and values as well as leading to new routes of action (Verplanken & Orbell, 2022). As a result, their automatic responses were able to be paused, as the theme "think before act" was found in the

current study. Secondly, a cognitive shift occurred in which they gained an understanding of nature and knowledge of emotion. Students can recall the characteristics of emotions that were taught in class when they are not occupied by reactive behaviours. Finally, breathing exercises were offered at the response modulation point as a tool for self-regulation, which is a premeditated plan to act in response to specific cues (Hagger & Luszczynska, 2014). This process of adopting a new behaviour could also be seen as an "if-then" implementation intention where students find it rewarding when they employ breathing as a new habit to replace undesirable behaviour when they feel out of control. As previously studied, when compared to just inhibiting habitual responses, this if-then implementation intention has a greater effect size (Adriaanse et al. 2011).

This extended theoretical model unpacked the habit disruption box in the Verplanken & Orbell (2022) model, which was used to explain how behaviour changes from a habit-driven behaviour to an attitude-driven behaviour, using the example of reaction change after an MBI. To some extent, the emotion regulation strategy model could integrate into this habit and attitude link model, as the behaviour change in the current study is in line with the transition through an emotional generative process from attention deployment to cognitive change and to response modulation. The new model also offers practical implications to help teachers understand the theory and gives a pathway for how to apply that model to understand student behaviour. Several elements, such as technique, cognitive change, and awareness, are particularly useful for practitioners, as these, as confirmed by students, helped their behaviour regulation, which has been illustrated in Chapter 6. The presented model also provides teachers with an applicable and comprehensible visual aid to think about whether this behaviour change process could be used in regulating any other behaviours. All these findings and the model provide a solid foundation for future large-scale research to explore this topic further.

Implications in responding to the critiques of MBIs. The current thesis addressed some criticisms of MBIs which had been discussed in the previous

literature review. First, more and more experts in the field have expressed concerns that the enthusiasm for MBIs may be outpacing the evidence (Dunning et al., 2022; Purser & Loy, 2019). The fast rise of the commodification of MBIs requires more rigorous studies, such as those with active control groups, larger sample sizes, and randomized controlled trials, to evaluate the effectiveness of MBIs. The current study responded to this need by conducting MBI in Chinese classroom settings to assess its effectiveness. Still, more studies are needed to further test its effectiveness.

Second, Purser and Loy (2013) questioned about the cultural appropriation of practicing MBI in the Western society, as the mindfulness had been taken out of its root of Buddhist context and “repacked” into a secular intervention. The current study aimed to restore MBI to its Eastern origins and assess its acceptability in a Chinese middle school setting. As previously mentioned in the literature review, the secular adaptation of MBI aligns with the requirements of the Chinese education system, which excludes religious elements in schools. Furthermore, the students' familiarity with Eastern culture may have facilitated their understanding of the course's content and philosophy. Thus, it is also plausible that reinstating MBI techniques in their cultural context contributed to the positive improvements observed in the current study.

Thirdly, Purser (2019) and Forbes (2019) have questioned the instrumental nature of mindfulness interventions in putting the individual responsible for mental health instead of addressing structural dynamics. However, addressing the structural dynamics that contribute to stress among students requires larger societal changes. Teaching students mindfulness techniques may not solve all the problems stemming from broader societal issues, but it provides a humanistic approach to addressing individuals' lives by equipping them with techniques to face difficult moments. As previously mentioned in the literature review, I am aware of the macrosystem-level effects from values and society, but I also believe that the microsystem (peer and school) has a strong impact on the development of human beings. By providing students with mindfulness techniques, this may help them develop an autonomous

sense of themselves, empowering them to better navigate the challenges they encounter in their daily lives.

7.4.3 Cross-cultural and methodological contributions

Several implications for the future of cross-cultural studies have also been drawn across the three studies and the one in Appendix A. First, it is important to pay close attention when translating terms with cultural connotations into another language. In other words, the back translation may not be sufficient. This thesis has highlighted the challenge of translating highly culturally loaded words, like "popular" or "well-being," because it is easy to lose the nuanced meaning of these phrases when they are translated into other languages. For culturally related terminology, this needs to be undertaken by various research teams with lived experiences of those cultures and has been addressed in previous studies (e.g., Clarke, 2020). Pioneering researchers have emphasized the need for culturally grounded conceptualisations of well-being, implying that "emic" perspectives can be combined with derived "etic" approaches to enrich understandings and develop more culturally sensitive models (e.g., McLellan, 2019). "Etic" refers to the extrinsic concepts and categories important to researchers, whereas "emic" refers to the intrinsic cultural distinctions significant to members of a cultural group (Pike, 1954). Future studies could follow this direction to explore both generalized, universal elements of well-being and cultural-specific elements of well-being. Finally, all these translations, metric, conceptual, and functional measurements, must be carefully validated through cross-cultural validation and psychometric testing before being used further.

Alternatively, this thesis offers a potential way of facilitating translation verification, instead of relying solely on word translation. Study 1 utilized previously produced descriptions of popular and likeable youngsters from research to obtain Chinese participants' agreements on choosing the words, instead of adopting direct translations. In the study, participants were asked to choose the word for each description to make sure the translated word matched what they had chosen for

the description. In this way, the nuance of “popular” and “likeable” was preserved in the description and validated by participants. This method of selecting translated words for another culture may be generally applicable to other cross-cultural studies. More studies are needed to further validate this method.

7.5 Conclusion

This thesis highlights the necessity of studying well-being, academic achievement, and social emotional skills within a single model and emphasises the importance of enhancing them as a bound entity using theoretical modelling and intervention evaluation. The findings present a clearer picture of the complicated and intercorrelated relationship between well-being, academic achievement, and social emotional skills in Chinese adolescents. Combining the findings of the three studies provides educators, policymakers, and researchers with tangible recommendations for who and what to target in future intervention development for optimal developmental outcomes.

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Appendixes

Appendix A Hedonic and Eudaimonic Well-being in Chinese

Understanding Wellbeing Profiles and the Relationship to Gender, Homeownership, Income, Marriage, and Education

Abstract:

Prior research has not provided a clear understanding of the link between Hedonic wellbeing (HWB) and Eudaimonic wellbeing (EWB), particularly how they operate within individuals. Using Latent Profile Analysis, five wellbeing profiles, namely the extremely low EWB, the extremely low HWB, the slightly low WB, the slightly high WB, and the extremely high WB group, were identified from a total of 1283 residents (51.1% male) in a large Chinese capital and coastal city, covering all ten districts of the city. Unlike previous studies in the Western sample, there were no divergent wellbeing profiles revealed (high HWB/low EWB or low HWB/high EWB). Multinomial Logistic Regression was also employed, and homeownership emerged as one of the strongest predictors of wellbeing, even after controlling for income. This study provides a new perspective on the long-standing debate regarding the relationship between HWB and EWB and suggests that cultural, cognitive, and language differences may influence how individuals internalise HWB and EWB. Finally, the findings regarding relationships between demographic variables and wellbeing profiles offer unique insights for policymakers and researchers seeking to promote wellbeing in a holistic way.

Keywords:

Wellbeing · Homeownership · Latent profile analysis · Cross-cultural perspective

Understanding Wellbeing Profiles and the Relationship to Gender, Houseownership, Income, Marriage, and Education

The study of wellbeing has garnered considerable attention from various fields such as psychology, sociology, economics, and statistics (Layard & De Neve, 2023). The exploration of wellbeing initially began in the field of psychology and has been the focus of significant research in the West world for over five decades and largely categorised studies into two distinct paradigms, hedonia and eudaimonia (Ryan & Deci, 2001). The relationship between these two paradigms has been a subject of ongoing debate, with some researchers arguing that they are closely intertwined (e.g., Waterman, 2008), while others propose that they are distinguishable constructs (e.g., Linley, Maltby, Wood, Osborne, & Hurling, 2009). Despite this extensive research on wellbeing, far fewer studies have investigated the associations between predictive variables and wellbeing profiles that take both hedonic (HWB) and eudaimonic (EWB) wellbeing into account. Furthermore, it is unclear whether hedonic and eudaimonic wellbeing are similarly placed in people from different cultural background. Therefore, this study aims to investigate the coexistence of hedonic and eudaimonic wellbeing in a Chinese population using latent profile analysis. By considering the cultural context in which these constructs are understood, this study further sheds light on the associations between predictive variables and wellbeing profiles, taking both HWB and EWB into account.

The indicators of wellbeing profile

Two distinct paradigms, hedonia and eudaimonia, each with its own understanding of what constitutes a well-lived life, have emerged in the literature (Ryan & Deci, 2001). Researchers of HWB are interested in determining people's subjective wellbeing (SWB), which commonly consists of life satisfaction (LS), positive affect (PA), and negative affect (NA) (Diener, 2009; Diener, 1984). On the other hand, eudaimonic researchers place an emphasis on EWB, which is typically measured via psychological wellbeing (PWB), a multidimensional construct that includes pursuing meaningful goals, self-acceptance, positive relationships with others, autonomy, environmental mastery, and personal growth (e.g., Ryff & Singer, 2008). Waterman's paper (2008, for review) provides clear examples of these four

terms: HWB, SWB, EWB, and PWB and conveys that hedonia and eudaimonia are “inter-related but reliably distinguishable.”

For decades, researchers have often debated whether there is a meaningful distinction between hedonic and eudaimonic wellbeing. According to research conducted in China, the United States, and the United Kingdom, subjective and psychological wellbeing are closely connected, but each has a distinct higher order factor structure (Biaobin, Xue, & Lin, 2004; Keyes et al., 2002; Linley, Maltby, Wood, Osborne, & Hurling, 2009). Others, however, believe that subjective wellbeing is a precondition for psychological wellbeing because it is impossible to have eudaimonia without feeling hedonia (e.g., Kashdan et al., 2008; Waterman, 2008). Therefore, these researchers posit that the relationship between these two wellbeing conceptions is closer than previous research indicates. Intriguingly, a cross-cultural study of subsamples from seven geographic regions suggested that a single overarching construct more accurately captures hedonia and eudaimonia as measured by self-reported subjective and psychological wellbeing than two separate constructs (Disabato, Goodman, Kashdan, Short, & Jarden, 2016). Variable-centred research has yielded a variety of approaches to illustrate the relationship between HWB and EWB, but there is little consensus on the relationship between HWB and EWB. Person-centred research, which identifies latent groups with a specific set of characteristics within a population (Spurk, Hirschi, Wang, Valero, & Kauffeld, 2020), may offer new insights into how individuals perceive the relationship between HWB and EWB.

Person-centred studies have examined wellbeing profiles in various populations, including adolescents with mental health-related indicators (e.g., Reinhardt, Horváth, Morgan, & Kokonyei, 2020), employees in France and the United Kingdom during lockdown (e.g., Harju et al., 2021), self-employed participants from 29 European countries with job-related wellbeing indicators (e.g., Bujacz, Eib, & Toivanen, 2020) and the general American adult population (Pancheva et al., 2021). However, the diverse research questions and indicators used in these studies make it difficult to compare results and contribute to a clearer understanding of wellbeing concepts. Moreover, various dimensions such as engagement, beneficence, and vitality are considered in different wellbeing models (e.g., Martela &

Riekk, 2018; Huppert & So, 2013) adds to the complexity of comparing results. To address these issues, the current study aimed to assess the relationships between HWB and EWB using commonly used measurements in a Chinese population, in order to make the results more comparable and understandable.

Finally, previous studies show that culture can influence people's understanding of wellbeing (Uchida et al., 2004) and which variables influence SWB most (Diener et al., 2003). In North America, wellbeing is characterized by personal achievement and an emphasis on maximizing positive emotions, while in Eastern cultures, wellbeing is focused on relationships and maintaining a balance between positive and negative emotions (Uchida & Kitayama, 2009). Furthermore, research has discovered that Eastern individuals tend to analyse objects holistically, focusing on themes and general similarities between constituent parts, while Western people are more likely to adopt an analytic cognitive style which enables them to analyse things in a context-independent manner (Varnum, 2010). Deploying a holistic thinking style regarding wellbeing, with a focus on recognition of similarity and complementarity, it is probable that EWB and HWB are more entwined in the minds of Chinese people than Westerners, which is suggested by the insights from cognitive psychology. It was therefore expected that Chinese people's interpretation of EWB and HWB differ from that of their Western counterparts, and that the degree of divergence between these hedonic and eudaimonic measurements in Chinese people is less significant. Consequently, this study employed a person-centred approach, namely Latent Profile Analysis, to examine the coexistence of HWB and EWB in the Chinese population.

Demographic Predictors of Wellbeing Profiles

Although many studies have examined how sociodemographic factors relate to various measures of wellbeing, few have investigated the links between these predictive variables and wellbeing profiles while considering both HWB and EWB. Examining how different demographic characteristics may influence an individual's likelihood of belonging to a particular wellbeing profile is essential to better comprehend these different profiles. Understanding these associations can provide valuable insights into how to promote and improve the wellbeing of individuals with different demographic backgrounds.

Gender is one of the key demographic components in wellbeing research. With a few outliers in low-income nations, large datasets from various countries have shown that women have higher levels of wellbeing than men (e.g., Graham & Chattopadhyay, 2013). One study based on two rounds of the Chinese General Social Survey (CGSS) came to a similar conclusion (Asadullah, Xiao, & Yeoh, 2018). However, because large-scale research or national surveys only collect data on hedonia, we know very little about gender differences in PWB. Pancheva et al. (2021) investigated gender differences in HWB and EWB and discovered that being female was associated with a lower probability of belonging to a combined low wellbeing profile (both HWB and EWB), whereas being male was associated with a higher probability of belonging to a combination of high HWB and low EWB, however same finding was not revealed in the study on the self-employed population (Bujacz et al., 2020). This study adopted a person-centred approach to see whether gender predicts membership in combined wellbeing profiles in a Chinese sample.

SES, with proxies such as housing, is viewed as one of the most powerful determinants of life-cycle satisfaction (Van Praag, Frijters, & Ferrer-i-Carbonell, 2003). Homeownership is seen as a foundation for "ontological security," which could potentially boost residential stability and social status (Saunders, 1989). While previous research in developed countries has focused primarily on the relationship between homeownership and housing satisfaction (Azimi & Esmaeilzadeh, 2017), there have been few studies that have examined the association between homeownership and overall life satisfaction (Hu et al., 2020). In China, however, homeownership is deeply embedded in the culture and is considered a sign of success (Zheng, Yuan, & Zhang, 2020). Several quantitative and qualitative studies have confirmed that homeownership is significantly associated with SWB in China (Hu, 2011; Hu & Ye, 2020; Kerstetter et al., 2022). However, there is a paucity of empirical research on the effect of homeownership on EWB or wellbeing profiles. Together, the current study looked into the relationship between homeownership and wellbeing profiles with both HWB and EWB.

The relationship between income and happiness is one of the most intriguing issues in the literature since the emergence of the economics of happiness or wellbeing (Clark et al.,

2008). In microeconomic studies, income has been found to be positively associated with both subjective and psychological wellbeing (e.g., Kaplan et al., 2008), but Esterline's paradox (1974) claims that above a particular threshold happiness does not grow when a country's income (GDP) rises (Clark et al., 2008). Pancheva's study (2021) discovered that their findings resonate with Esterline's results, in which a higher income was related to a decreased likelihood of both low HWB and EWB, but no significant effect was detected in responses to other wellbeing clusters, examining the relationship between income and wellbeing clusters. Additionally, Bujacz et al.'s study (2020) identified an unhappy profile (the lowest wellbeing level group) linked to the lowest level of income. Therefore, similar results are expected to be found in the current study.

Marital status and happiness have been extensively researched and are considered to be closely related (Hawkins & Booth, 2005). Numerous research has found that marital status is associated with improved subjective and psychological wellbeing (Shapiro & Keyes, 2008). In a longitudinal sample, a positive causal link was discovered between marriage and subjective wellbeing (Stutzer & Frey, 2006). Notably, some studies evaluated the relationships between marital status and psychological wellbeing using health-related questionnaires rather than EWB-related questionnaires to assess psychological wellbeing (e.g., Kim & McKenry, 2002). Limited study has looked the relation between marital status and EWB. Interestingly, using person-centred approach, Pancheva et al. (2021)'s study found not only that those who are married are less likely to experience a low HWB and EWB, but also eudaimonic benefit of marriage is more significant than the hedonic benefit. However, the same effect of marital status was not found in Keyes et al.'s (2002) study.

Lastly, the effect of education level on happiness is a significant demographic variable to explore, although the results are inconsistent (Kristoffersen, 2018). Some researchers have documented a positive relationship between education and subjective wellbeing (e.g., Blanchflower and Oswald, 2004), whereas others have discovered a negative relationship (e.g., Shield et al., 2009). According to one study conducted in 35 countries (both eastern and western), the number of years spent in education was a strong predictor of life satisfaction (Cheung & Chan, 2009). Moreover, after controlling for income, employment status, and

other socio-economic variables, data from Spain indicate that education has a positive (direct) effect on happiness (Cuñado & de Gracia, 2012). Inconsistent results have also pertained to the association between education level and wellbeing groups. Even though both studies indicated that a higher education is linked to a lower likelihood of falling into both the low hedonic and eudaimonia clusters, Pancheva et al. (2021) did not replicate Keyes et al.'s (2002) finding of a high EWB and low HWB pattern that is determined by education level. It is important to note, the categorisation in Keyes et al. (2002)'s study is based on SWB and PWB scale tertile standing, so the impact of educational level on wellbeing profiles remains unclear.

Despite a significant amount of wellbeing research undertaken worldwide and cross-culturally, little emphasis has been paid to how different wellbeing concepts are understood in non-Western contexts. Building on earlier research, the current study addressed the following issues: First, it aimed to investigate the wellbeing profiles of the Chinese population using HWB and EWB indicators with a person-centred approach to capture the intricate relationships. Moreover, cultural variations were expected to influence how Chinese individuals perceive HWB and EWB, leading to distinctive characteristics that differ from the previous findings. Finally, this study investigated how different sociodemographic variables influence Chinese people's membership in distinct wellbeing profiles. The study hypothesized that female individuals, homeowners, higher earners, married individuals, and those with higher levels of education would have higher wellbeing profiles.

Method

Participants and Procedure.

This study utilized a door-to-door survey method to collect data from a representative sample of 1283 residents (51.1% male) in a large Chinese capital and coastal city, covering all ten districts of the city. The data was collected using tablets, participants had the option to complete the questionnaire themselves or have a volunteer read the questions to them based on their reading skills. Importantly, participants were fully informed of their right to withdraw at

any time during the survey, and the study was approved by the affiliated institution's academic ethics review committee.

Measures

Demographic Characteristics

Personal demographic information was collected at the beginning of the survey. Sex was classified as "female," "male," or "other." Similarly, information on home ownership (yes/no/preferred not to say) and marriage (yes/no/preferred not to say) was gathered in the same manner. Because no one responded as "other" or "preferred not to say", sex, home ownership, and marriage were treated as binary variables and entered as predictors in subsequent analyses. Homeownership was asked by "Do you own at least one house/flat in XXX?".

Individual monthly income was measured on a 5-point scale (less than 2000 RMB, 2001-5000 RMB, 5001-10000 RMB, 10001-50000 RMB, more than 50001 RMB). The cutting points were based on the distribution of monthly income of this city's citizens from China's National Bureau of Statistics as well as consultation with economists with expertise. The level of education was also asked on a 5-point scale (less than high school, high school, associate degree, undergraduate, post-graduate, and more).

Hedonic Wellbeing in Cantril Scale (WICS)

Single and numeric questions are highly valued and widely employed in both research and policy due to their brevity and cost-effectiveness (Bowling, 2004; Kaiser & Oswald, 2022). Single-item measures can be used in conjunction with multidimensional measures to provide broad summary assessments of that many aspects of respondents' health (Bowling, 2004), in this case for measuring wellbeing. The Cantril scale (Cantril, 1965) was adopted to measure individuals' self-reported wellbeing/ happiness level in the ladder. The top of the ladder represents the best wellbeing (最幸福 xingfu) people, and the bottom of the ladder

represents the worst wellbeing (最不幸福) people. On which step of the ladder would you say you personally feel you stand at this time? In keeping with the previous study, a single-item indicator of overall satisfaction with life was considered as one measurement for HWB (Pancheva et al., 2021). Thus, this measurement was also considered one aspect of assessing HWB.

Hedonic Satisfaction with Life Scale (SWLS)

A pre-validated self-report measure – the Chinese version of the SWLS – was used to assess HWB as a clear agreement on life satisfaction is the core element of Hedonia, but not so much for the absence of negative emotions (Pavot & Diener, 1993; Huta & Water, 2014). The SWLS consists of 5 items (for example, "I am satisfied with my life") scored on a 7-point Likert scale (1= "strongly disagree", 3= "neither agree or disagree", 7= "strongly agree") where higher scores represent higher life satisfaction. According to a prior study (Xiong & Xu, 2009), the alpha coefficient for SWLS in China is .78. Cronbach's alpha for this scale was .89 in this study.

Eudaimonic Flourishing Scale (FS)

The translated Flourishing Scale (FS; Diener et al., 2010) was used to assess EWB, and it has shown satisfactory psychometric properties in a Chinese community sample (Tang et al., 2016, $\alpha = .90-.93$). The FS consists of 8 items in assessing distinct dimensions such as relationships, self-esteem, purpose, and optimism (for example, "I live a purposeful and meaningful life") measured on a 7-point Likert Scale (1= "strongly disagree", 3= "neither agree or disagree", 7 being "strongly agree"). The higher the total score, the better one's psychological wellbeing. Cronbach's alpha for this scale was .89 in this study.

Data Analysis

To identify participant subgroups, the analysis employed Mplus 8 (Muthen & Muthen,

1998–2018) using maximum likelihood estimator with robust standard errors (MLR) (Muthen, 2004). This person-centred approach yielded latent profiles with more uniform response patterns (Muthen & Muthen, 2000). To determine the optimal number of profiles, multiple latent profile models (1-class to 6-class) were investigated with HWB and EWB as indicators using standardized units to facilitate interpretation. The Akaike information criterion (AIC); the Bayesian information criteria value (BIC); the adjusted BIC (aBIC); the Lo, Mendell, and Rubin likelihood ratio test (LMR-LRT) (Lo, Mendell, & Rubin, 2001); the bootstrapped likelihood ratio test (BLRT); and Entropy were used in interpreting the data. Lower BIC and AIC values indicate a better fit (Nylund et al. 2007). If the p-value for VLMR, LMR-A, or BLRT is significant, the k-class model outperforms the k-1-class model. Classification precision is represented by entropy values ranging from 0 to 1, with larger values indicating better precision (Jung & Wickrama, 2008). Following the identification of the many types of wellbeing profiles, multinomial logistic regressions via the R3STEP method (Asparouhov & Muthen, 2014) were used to examine the associations between demographic factors, and various wellbeing profiles.

Results

Descriptive statistics

The bivariate correlation of main study variables is presented in the table 1.

Table 1 Descriptive statistics and bivariate correlations for all study variables

	Cantril scale	Life satisfaction	Flourishing	gender	houseownership	income	Marital status	education
Wellbeing in Cantril scale	-							
Life satisfaction	.57***	-						
Flourishing	.63***	.41***	-					
Gender	.06*	.01	-.05	-				
Houseownership	.24**	.31**	.21**	-.03	-			
Income	.06*	.12**	.19**	-.25**	.27**	-		
Marital status	.16**	.26**	.16**	-.02	.16**	.18**	-	
Education	-.05	-.03	.10**	-.08**	.04	.46**	-.20**	-
M	7.26	24.79	44.87	.51	.57	2.75	.63	3.12
SD	1.73	5.69	6.27	.50	.50	.98	.48	1.18

Note. * $p < .05$; ** $p < .01$; *** $p < .001$

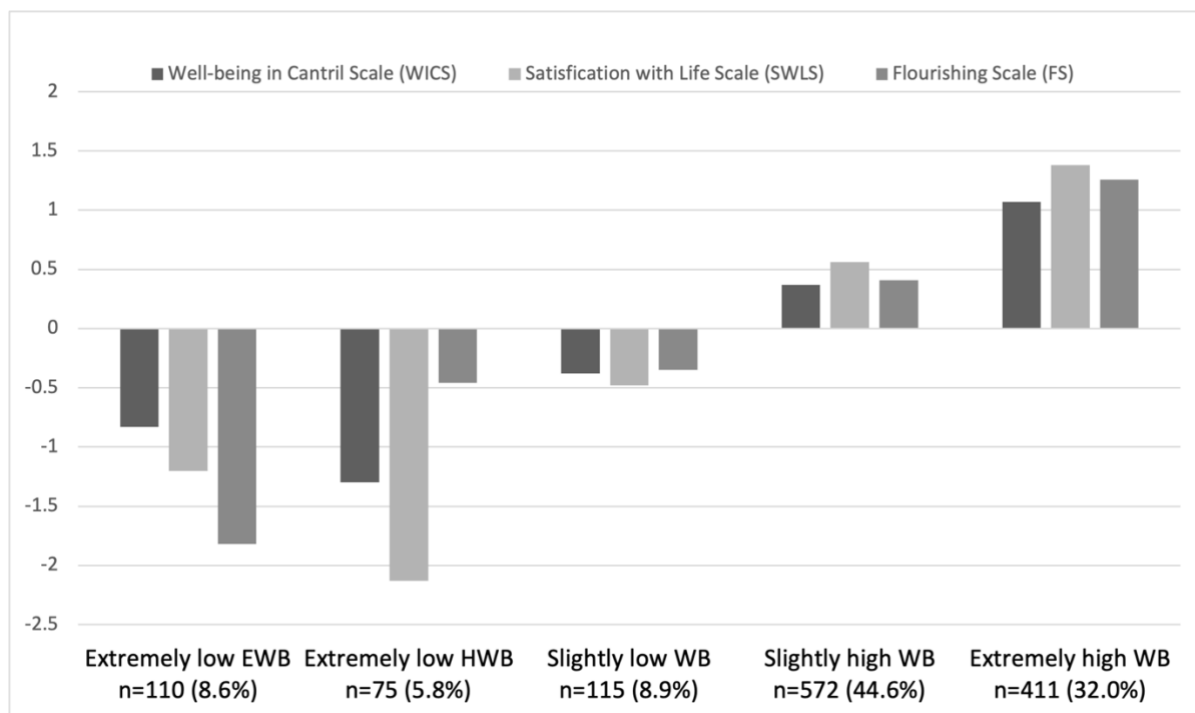
Identification of Wellbeing Profiles

The results of the LPA models indicated that the 5-class solution produced the optimal description of wellbeing profiles (see Table 2). First, the 6-class solution had the lowest AIC, BIC, and aBIC; however, the smallest profiles only contained 3 people, which is 0.2% of the population. Moreover, VLMR and LMRA were not significant, indicating that the 6-class solution was not superior to the 5-class solution. Thus, the 6-class solution was ruled out. Besides the 6-class solution, the 5-class solution had the lowest AIC, BIC, and aBIC. Moreover, VLMR and LMR-A were significant in the 5-class solution, indicating that 5-class was superior to 4-class. Last, the 5-class solution also had the highest entropy among the rest of the 5 classes. The elbow plot is included in the appendix.

Table 2 Model fit indices for the latent profile classification with 1-6 classes

Profile	AIC	BIC	aBIC	VLMR p-value	LMR-A p-value	BLRT p-value	Entropy	Group	Smallest profile (%)
1	10932.0	10962.9	10943.9	-	-	-	-	1283	100
2	10019.2	10070.7	10039.0	$p < .001$	$p < .001$	$p < .001$	0.76	467/816	36.4
3	9851.9	9924.1	9879.6	$p = .09$	$p = .1$	$p < .001$	0.71	189/524/570	14.7
4	9749.6	9842.4	9785.2	$p < .05$	$p < .05$	$p < .001$	0.77	94//422/143/624	7
5	9659.7	9773.1	9703.3	$p < .05$	$p < .05$	$p < .001$	0.77	110/75/572/411/115	5
6	9586.6	9720.7	9638.1	$P = .1$	$P = .1$	$P < .001$	0.8	75/410/132/113/3/550	0.2

Note. Values in bold type indicate the chosen model in this study. AIC= Akaike information criterion; BIC= Bayesian information criterion; aBIC= the adjusted Bayesian information criterion; VLMR = Vuong-Lo-Mendell-Rubin likelihood ratio test; LMR-A= Lo, Mendell, and Rubin Adjusted likelihood ratio test; BLRT= bootstrapped likelihood ratio test. $*p < .05$; $**p < .01$; $***p < .001$

Figure 1 The standardized means of wellbeing indicators for final profiles solution

Five profiles were revealed in Figure 1. The extremely low EWB group contained 8.6% of the participants. All of the people in this profile had standardized WICS, SWLS, and FS scores that were less than zero. Additionally, this population has the lowest PWB of all the groups. The extremely low HWB group ($n = 75$, 5.8%) had the lowest HWB (both WICS and SWLS) of the five groups, with all standardized WICS, SWLS, and FS scores less than zero. In the third profile, the group labelled "slightly low wellbeing" contained 8.9 percent of the participants. Individuals who made up this profile scored all standardized WICS, SWLS, and FS slightly lower than zero. All of the wellbeing measurements in the first three groups had their standardized scores less than zero, representing roughly one-quarter of the total population. With over 75% of participants, the fourth and fifth groups were the most common. Both groups' standardized WICS, SWLS, and FS scores were greater than zero. The fourth group was labelled as "slightly high wellbeing," and it made up 44.6% ($n = 572$) of the sample. And the last group, which made up 32.0% ($n = 411$) of the sample, was identified as the "extremely high wellbeing group." These two groups also had similar score patterns. The fourth group had moderate WICS, SWLS, and FS levels, while the last group had the highest level of all measurements.

Socio-Demographic Predictors

Table 2 shows the effects of gender, homeownership, income, marriage, and education on the likelihood of belonging to each of the five profiles. The probability of an individual belonging to the reference profile relative to another profile was calculated. The effect of gender was only significant in one comparison, which revealed that males are more likely to fall into the slightly high WB (as a reference group) than the extremely low HWB group.

The effect of house ownership was significant in the majority of comparisons. In short, people with a house or flat are less likely to fall into extremely low EWB and HWB and more likely to fall into those more adaptive groups. The only exception was that no significant difference was found when comparing extremely low EWB with extremely high WB. However, when compared slight low WB group with the other two more adaptive groups (the slightly high and the extremely high groups), owning a property significantly predicted membership in the slightly low WB group ($B = 1.33$, $p < 0.01$, odds ratio [OR] = 3.79; $B = 1.68$, $p < 0.001$, OR = 5.38).

Interesting, when controlling for house ownership, gender, marriage, and education together with income, no significant effect was found on income in predicting the membership of the wellbeing Group.

The comparison of the extremely low EWB and extremely high WB with a slightly high WB as the reference group revealed that the married people were more likely to fall into the slightly high WB rather than the other more extreme groups ($B = -1.30$, $p < 0.001$, odds ratio [OR] = 0.27; $B = -0.69$, $p < 0.01$, OR = 0.53). Moreover, married people were more likely to fall into the slight low WB than the extremely low EWB compared to unmarried people ($B = 0.98$, $p < 0.05$, odds ratio [OR] = 2.66, $p > 0.05$)

Finally, education level is another significant predictor in this study. People with higher education were less likely to fall into the extremely low EWB group in comparison to either the slightly high WB, the extremely low HWB, or the extremely high WB ($B = -0.49$, $p <$

0.001, odds ratio [OR] = 0.61; $B = -0.39$, $p < 0.05$, OR = 0.68; $B = 0.45$, $p < 0.01$, OR = 1.56). When compared to the slightly high WB and the slightly low WB, people with higher education were more likely to fall into the slightly high WB ($B = -0.59$, $p < 0.001$, OR = 0.56). When compared to the extremely low HWB and the slightly low WB, people with higher education were more likely to fall into the extremely low HWB ($B = -0.49$, $p < 0.05$, OR = 0.61, $p > 0.05$).

Table 2

Coefficients for the five profiles with gender, homeownership, income, marriage and education as predictors

Predictors	slightly high WB vs extremely low HWB		slightly high WB vs extremely low EWB		slightly high WB vs extremely high WB		slightly high WB vs slightly low WB		extremely high WB vs slightly low WB	
	β	OR	β	OR	β	OR	β	OR	β	OR
Gender	-0.65*	0.52**	0.05	1.05	-0.18	0.833	-0.17	0.845	0.02	1.02
Homeownership	-1.31**	0.27***	-0.70*	0.50**	-0.35	0.704	1.33**	3.788*	1.68***	5.38*
Income	-0.09	0.91	-0.28	0.76	-0.20	0.819	0.08	1.085	0.28	1.32
Marriage	-0.60	0.55	-1.30***	0.27***	-0.69**	0.503***	-0.33	0.723	0.36	1.44
Education	-0.10	0.91	-0.49***	0.61***	-0.04	0.958	-0.59***	0.556***	-0.54***	0.58***
Predictors	extremely low HWB vs extremely low EWB		extremely low HWB vs extremely high WB		extremely low HWB vs slightly low WB		extremely low EWB vs extremely high WB		extremely low EWB vs slight low WB	
	β	OR	β	OR	β	OR	β	OR	β	OR
Gender	0.70	2.01	0.46	1.59	0.48	1.61	-0.23	0.79	-0.22	0.80
Homeownership	0.61	1.84	0.96*	2.62	2.65***	14.09*	0.35	1.42	2.04***	7.66*
Income	-0.18	0.83	-0.11	0.90	0.18	1.191	0.08	1.08	0.36	1.43
Marriage	-0.71	0.49	-0.09	0.91	0.27	1.312	0.62	1.85	0.98*	2.66
Education	-0.39*	0.68*	0.06	1.06	-0.49*	0.614	0.45**	1.56*	-0.10	0.91

Note. β represents the regression coefficient. OR (odds ratio) is the probability of an individual staying in the reference profile divided by the probability to transition to another profile. Gender is coded 0=girl, 1=boy; Homeownership is coded 0=not owning a house, 1=owning a house. Marriage is coded 0=not married, 1= married. Groups in bold type indicate the reference groups. * $p < .05$; ** $p < .01$; *** $p < .001$

Discussion

Profiles of Wellbeing

In this study, five profiles, namely the extremely low EWB, the extremely low HWB, the slightly low WB, the slightly high WB, and the extremely high WB group, were identified as representing different degrees of wellbeing. Interestingly, Pancheva et al.'s (2021) findings share lots of similarities with the current study, which also found five unique clusters (Uniformly Low Wellbeing, Mixed High EWB/Low HWB, Mixed High HWB/Low EWB, Somewhat High Wellbeing and Mostly High Wellbeing) using self-organized map clustering techniques. Somewhat High Wellbeing and Mostly High Wellbeing, as well as the slightly high WB, and the extremely high WB group found in the current study are all considered as more adaptative groups. Interestingly their level of wellbeing profile indicators exhibited similar levels within each group, which contrasted with the patterns seen in other maladaptive groups. This outcome to some extent reflects Leo Tolstoy's (1995) expression that "All happy families are alike; each unhappy family is unhappy in its own way."

Before jumping into discussing the difference of results in different cultural contexts, it is necessary to reflect on the assumption that these results can be compared cross-culturally.

- 1) Chinese people may not be able to understand these concepts and measurements of wellbeing the same way that Westerners do because these concepts may fundamentally be untranslatable in another language, or the measurements are not as ready as to the Chinese context compared to the Western tradition.**

Chinese people may not have the same understanding of wellbeing concepts and measurements as Westerners, which could affect the validity of cross-cultural comparisons. For instance, Research conducted on Chinese adolescents indicated that Ryff's six-factor model of psychological wellbeing exhibited only a barely satisfactory fit, suggesting that constructs of EWB or PWB may not be as relevant to Chinese

culture as they are to Western culture (Gao & McLellan, 2018). Besides construct equivalence, cross-cultural research requires structure equivalence, metric equivalence, and scalar equivalence as essential elements (van de Vijver & Leung, 2011). However, it is often observed that the equivalence of the semantic content of the items is overlooked, as highly culturally loaded words are challenging to translate accurately (Boehnke, 2022). For example, previous studies have highlighted the challenge of translations as two different translations of the word "popular" in Chinese have revealed an opposite correlation with other variables (Niu et al., 2016; Zhou & McLellan, 2020). Thus, careful consideration should be given to the semantic equivalence in addition to psychometric equivalence when conducting cross-cultural comparisons.

Moreover, significant genetic and linguistic distinctions between the East and the West may influence how individuals perceive things (Varnum et al., 2010). Because wellbeing concepts, such as SWB, PWB, EWB and HWB, are more Westernized ideas, Chinese citizens may not be familiar enough with them to assess them, like Wittgenstein (1992) held that an expression has meaning only in the context of one's own life. Thus, it is still possible that Chinese participants in this study comprehended those items differently compared to Western participants, or that they were unable to fully understand the concepts of HWB and EWB in the absence of exposure to Western contexts (McLellan, 2019). Further, researchers also pointed out that only western-invented items lead to the systematic exclusion of items that have been developed outside of the Western world (Boehnke, 2022), resulting in a pseudoetic trap, as termed by Ford et al. (2015). This also echoes with some research that has proposed utilizing a 6-item expanded SWLS (E-SWLS) that covers intra- and interpersonal aspects as a better measure of wellbeing in Chinese culture (Tang et al., 2016). Thus, some researchers believe when comparing wellbeing across cultures, it may be more logical to employ culturally, and contextually relevant assessments as opposed to relying uncritically on existing scales from literature.

2) Chinese people may be able to understand these concepts and

measurements of wellbeing in the same way that Westerners do. Still, the cultural, linguistic, and cognitive differences between Chinese and the Westerners impact their answers to these measurements.

Linguistic theories argue that even the most culturally specific concepts may be broken down into universally recognized simpler pieces (Wierzbicka, 2004), as SWB, PWB, EWB, and HWB concepts have been "broken down" into different constructs and items, it is possible that Chinese people comprehend those measurements in the same way that their western counterparts do. Given the context of the twenty-first century, with the continuous communication between cultures, the rapid growth in multilingualism, and knowledge exchange on the internet, this could be a unique time suited for more rigorous cross-cultural studies. In this case, the results are comparable.

One of the major differences between results from the current study and a previous study on general adult American population (Pancheva et al., 2021) is that around 30% of respondents registered divergent scores in EWB and HWB, such as having a high EWB/low HWB combination or vice versa. This finding indicates that a considerable portion of the population in the United States has HWB levels that contrast with their EWB, and it was explained that personal progress often comes at the expense of happy emotional states (Pancheva et al., 2021). However, no such divergent group was found in the Chinese sample.

Extremely low HWB and extremely low EWB groups seem to mirror the low EWB/high HWB group and the low HWB/high EWB group in the previous study where both differences between EWB and HWB are high. However, the extremely low HWB group found in this group has both EWB and HWB lower than the average mean, whereas the mixed high HWB/low EWB group has EWB higher than the average mean and HWB lower than the mean (a table of detailed comparisons between the two studies is included in the appendix). In another word, EWB and HWB exhibited in a same direction in this Chinese general population sample. It should be noted that the prevalence of the two maladaptive groups identified in the current study was less than

15%, which is significantly lower than the corresponding group in the mentioned study (30.1%).

The reason why a mixed high HWB/low EWB group or a high EWB/low HWB group is not found in the China sample may be due to the following reasons.

To begin with, the cognitive differences between Easterners and Westerners may influence how people perceive and respond to these measurements. From a cross-cultural perspective, East Asians tend towards holistic cognition, while Westerners tend towards more analytic processes (Varnum et al., 2010). People's attention, classification, attribution, and reasoning are the most evident differences between these two cognitive inclinations. Chinese thinking processes, in particular, are more holistic in that they categorize objects based on themes and family resemblance (Nisbett, Peng, Choi, & Norenzayan, 2001). As a result, Chinese people may find it more difficult to focus on a single dimension than analytic thinkers, who can more easily separate items from their settings; instead, holistic thinkers pay close attention to relationships and context when assessing EWB and HWB. As a result, the connection between these two concepts got stronger and more cohesive for holistic thinkers.

On top of that, cultural variations like collectivism and individualism may also play a role here. Confucianists place a high value on "harmony," which refers to "balancing and reconciling contrasts and conflicts," and this harmony philosophy can be applied to individual thought, social interactions, and even the world (Li, 2008; Li, 2013). We propose that Confucianist harmony ideals may guide Chinese people to reflect the understanding of the HWB and EWB more convergently in order to establish individual internal harmony. In this case, culture may influence not just the understanding of EWB or HWB but also their relationship, making them more synergetic.

Finally, the results in the Chinese sample could be attributed to a more widely accepted value in a higher hierarchy than Hedonia and Eudaimonia, which determine the outcome of tested scales among Chinese participants. According to a recent study,

a single overarching construct better captures Hedonia and Eudaimonia as measured by self-reported subjective and psychological wellbeing (Disabato et al., 2016). Interestingly, the words "wellbeing" and "happiness" are both usually translated into the same Chinese word, "幸福 xingfu." Some academics believe that differences in language can be utilized to explain cultural disparities in reasoning styles (Logan, 1986; Hamers & Blanc, 2000). Therefore, it is not out of the question that Chinese individuals may have a strong overarching understanding of wellbeing (xingfu) that influences how they report their responses in HWB and EWB measurements.

Together, linguistic, cultural, and cognitive traditions in Chinese culture may lead to a more similar understanding of HWB and EWB, compared to their Western counterparts. These findings highlight the importance of considering cultural differences in studying wellbeing as well as interpreting previous research results.

Predictors of Wellbeing Profiles

Homeownership was one of the strongest factors that predicted participants' memberships in this study, even after controlling for income. In general, the results showed that homeownership had a protective effect in preventing individuals from falling into either of the two extremely low wellbeing teams. This conclusion is consistent with earlier research in the Chinese setting that demonstrates a strong causal relationship between homeownership and SWB, even when new homeowners' financial issues are included (e.g., Zhang et al., 2018; Hu et al., 2020; Zheng, Yuan, & Zhang, 2020). Homeowners also have a better sense of belonging to their community and a higher social status than renters, hence raising their PWB (Hu, 2011).

Furthermore, the Chinese norm known as "An Ju Le Ye(安居乐业)" encourages individuals to reside in a place where they feel secure and at peace and to take pleasure in their work. Cultural ideologies specific to China may go some way to explaining the present findings, as this idiom is believed to offer Chinese people a path to a wealthy and contented life, with homeownership forming a special part of

this vision.

However, when compared between the slightly low, slight high, and extremely high wellbeing groups, people who have a house or flat are more likely to fall into the slightly low wellbeing group other than the other two more adaptive groups. Previous study indicated that the causal effect of homeownership on SWB was unaffected by new homeowners' financial difficulties (Zheng, Yuan, & Zhang, 2020). This study seems suggests that the weight of mortgages, mobility limits, housing price volatility, or other homeownership-related issues may still impair Chinese individuals' ability to achieve a more well-rounded and adjusted wellbeing. Together, homeownership may prevent people from having the worst wellbeing profiles, but it may also hinder them from having the optimum wellbeing profiles. This is the first study to apply a person-centred method to examine the relationship between homeownership and HWB and EWB indicators simultaneously, and the findings corroborate and extend variable-centred studies on the relationship between homeownership and wellbeing in the Chinese population. Future research could look into what factors are associated with property ownership that prevent people from having a more adaptive wellbeing.

In addition, the level of education is the second-strongest indication among these demographic factors. In contrast to the effect of homeownership on predicting membership in the low WB group, those with a higher level of education have a greater chance of belonging to the slightly high or extremely high wellbeing groups as compared to the slightly low group. When a person is not in the absolute worst situations, it appears that owning a home inhibits them from having the highest wellbeing profiles, whereas schooling would help them achieve better profiles. Furthermore, when compared between the extremely low EWB and the slightly high WB, the extremely low HWB, or the extremely high WB, the higher education level, the lower possibility that an individual will fall into the extremely low EWB. This result is consistent with earlier studies indicating that a higher level of education decreases the risk of having a high HWB/low EWB combo (Pancheva et al., 2021). In addition, this appears to support the findings of a study conducted on another

American population, which indicated that the low HWB/high EWB group has the highest mean level of education (Keyes et al., 2002). It appears that education level has a unique effect on EWB, as those with a higher education are less likely to fall into the extremely low EWB group.

In addition, when comparing slightly high WB and slightly low WB to extremely low EWB, it was discovered that married individuals were less likely to fall into the extremely low EWB category. This concurs with earlier variable-centred studies that discovered divorce and single status to be strongly connected with low psychological wellbeing (Shapiro and Keyes, 2008). Since no such difference was observed when comparing the extremely low HWB group to other groups, it is plausible to believe that this finding is consistent with a prior study that concluded that the effect of marriage is "more pronounced for the eudaimonic than the hedonic wellbeing dimension" (Pancheva et al., 2021). More studies needed to further understand this special relationship between marriage and eudaimonia.

Lastly, gender and income had the least predictive power for membership in wellbeing groups. The previous study found that being female is connected with a decreased risk of experiencing joint low wellbeing patterns, whereas being male is associated with an increased risk of experiencing a combination of high HWB and low EWB (Pancheva et al., 2021). This sample did not yield the same outcome. Furthermore, there was no significant effect of income on predicting membership in the wellbeing group. According to the previous study, participants who claimed to have an adequate income in the European sample were more likely to have profiles with higher-than-average levels of wellbeing (Bujacz et al., 2020). One study suggested that money is a more important factor in explaining SWB among Chinese (Chen, 2012) due to the relatively lower income in China; however, this does not appear to be the case in our sample after controlling for home ownership, gender, marriage, and education. This may be related to the fact that this sample was collected in a coastal, more developed city where people had higher salaries, reducing the importance of money for happiness. This may partially explain the divergent

outcome, but further investigation is required to help in understanding it.

Limitations and Suggestions for Future Research

Several limitations should be addressed. First, age, which is a common demographic indicator in wellbeing research, was not included in the analysis due to a lack of available data. Second, this study compared its outcomes with a previous study conducted in the western sample to illustrate the similarities and differences. However, it is challenging to rule out the possibility that the various analytical techniques and measurements applied in these two studies contributed to the divergent results. Future research could therefore use more consistent analytical techniques and measurements to justify these findings. For example, the measurement of positive and negative affect was excluded in order to maintain the questionnaire length, despite the fact that it is an essential component of SWB. This metric might be included in future studies to give a more comprehensive picture of the relationship between HWB and EWB and cultural differences. Third, our research was limited to a cross-sectional design, which made it impossible to establish a causal association between the variables. Longitudinal designs could be used by future researchers to better investigate the directional effect. Furthermore, only self-reported data was used in this study. More objective data and observational studies focusing on aspects associated with wellbeing could be used by future researchers to supplement self-reported data.

Conclusion

By using a person-centred approach and evaluating the relationships of these profiles with demographic factors as predictors while comparing results from diverse cultural backgrounds, this study adds to our understanding about the ongoing debate between HWB and EWB. Notwithstanding its limitations, the research has important theoretical and practical implications for policymakers as well as scholars.

Importantly, the study suggests that Chinese individuals may have more harmonious understandings of HWB and EWB, highlighting several possible cultural explanations for this difference. The study shows that homeownership is a strong predictor of both HWB and EWB suggests that affordable housing policies, particularly in China, may

be essential for avoiding extremely low levels of wellbeing. Furthermore, even after controlling for income, the study reveals education as one of the biggest predictors of wellbeing. Individual income has little predictive value when education and homeownership are taken into consideration, showing that investing in education may be a more effective way of boosting people's wellbeing. These findings offer valuable insights into understanding the relationship between HWB, EWB and other demographic variables from a cross-cultural perspective and provide policymakers with evidence to inform their investments in promoting the wellbeing of their people.

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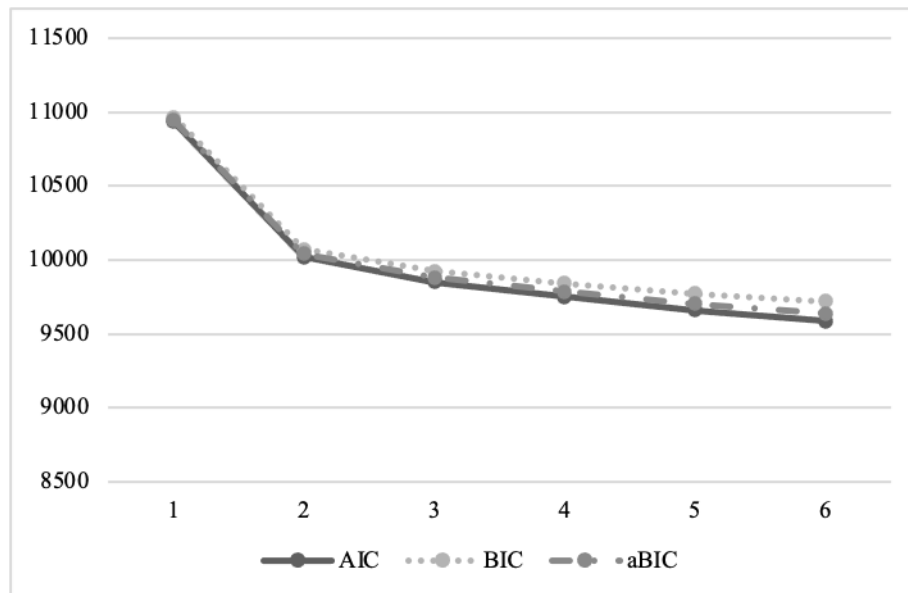
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Appendix

In Figure 1, the elbow plot shows the turning point is at the 2-class solution. However, the 5-class solution revealed two distinct groups with distinct patterns when compared to the 2-class solution. Taken together with other criteria, the 5-class solution was the optimal model.

Figure 1 Elbow plot of the information criteria for 1-6 classes



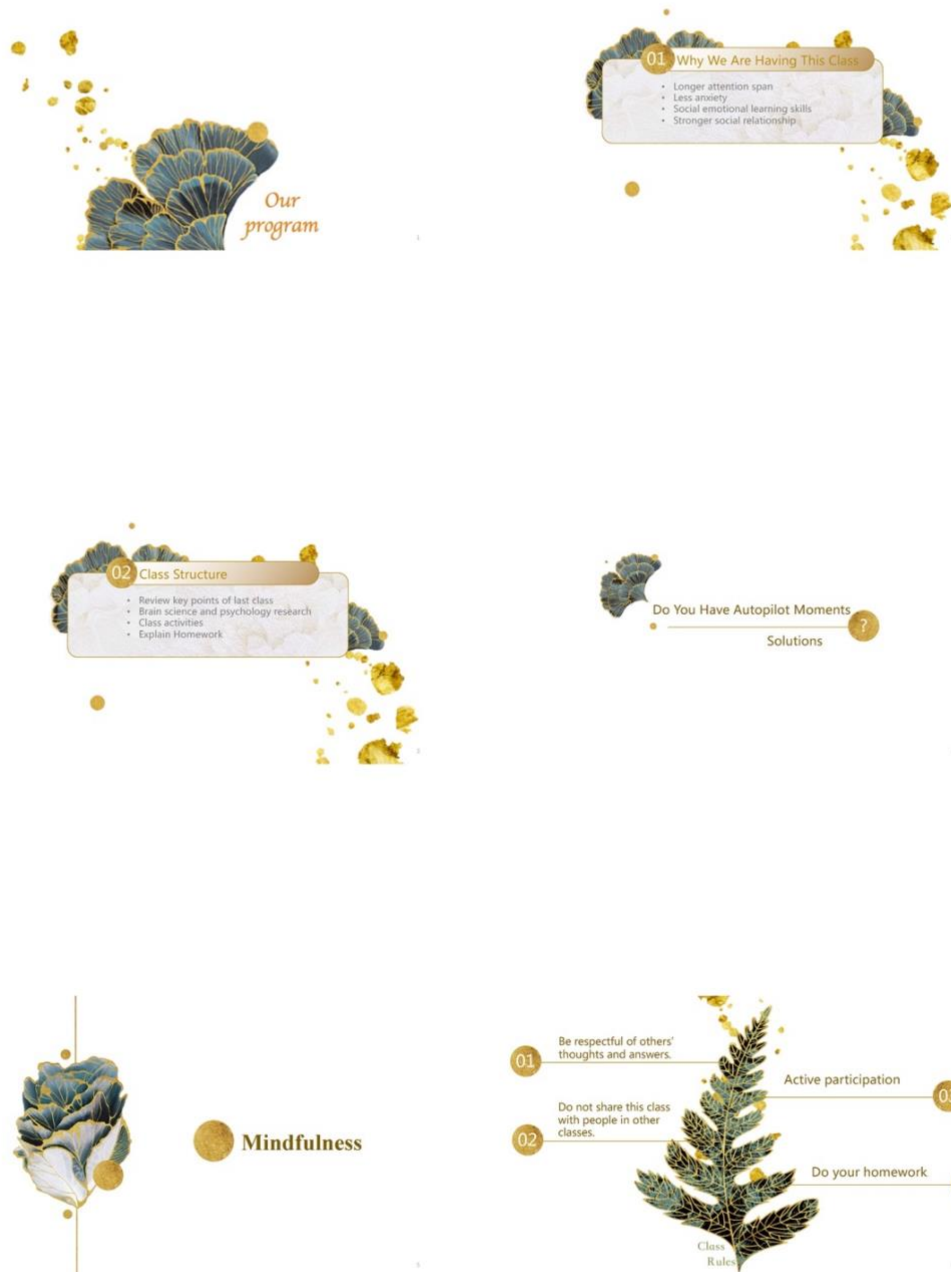
Note. AIC= Akaike information criterion; BIC= Bayesian information criterion; aBIC= the adjusted Bayesian information criterion

Table 2 A comparison of the current study and a previous study (Pancheva et al., 2020)

Group comparison	Percentage	Similarities and differences
Slightly low WB vs Uniformly Low Wellbeing	8.9% vs 23.61%	All dimensions/variables are low than sample average.
Extremely low SWB vs Mixed High EWB/Low HWB	5.8% vs 15.71%	Both groups had HWB aspects higher EWB. However, Extremely low SWB group has both SWB and PWB lower than average mean whereas Mixed High EWB/Low HWB has EWB higher than average mean and HWB lower than mean.
Extremely low PWB vs Mixed High HWB/Low EWB	8.9% vs 14.48%	The differences between EWB and HWB are high. However, Extremely low PWB group has both SWB and PWB lower than average mean whereas Mixed High HWB/Low EWB has EWB higher than average mean and HWB lower than mean.
Slightly high WB vs Somewhat High Wellbeing	44.6% vs 27.14%	Both groups had wellbeing dimensions and factors all slightly higher than average.
Extremely high WB vs and Mostly High Wellbeing	32.0% vs 19.06%	Both groups had the best wellbeing across all dimensions and factors.

Appendix B Contents of MBI

Appendix B1 PowerPoint



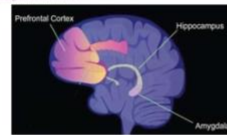


Prefrontal Cortex:

- The prefrontal cortex (PFC) is the cerebral cortex covering the front part of the frontal lobe. It is implicated in planning complex cognitive behavior, personality expression, decision making, and moderating social behavior.

Hippocampus:

- Hippocampus is embedded deep into temporal lobe. It has a major role in emotion, motivation, learning and memory.



Amygdala :

- The amygdala is one of the two almond-shaped clusters of nuclei. It helps coordinate responses to things in your environment, especially those that trigger an emotional response. This structure plays an important role in fear and anger.

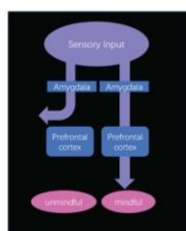
First
Key
Parts

Our brain

- What does brain look like?
- Please use your own words to describe the function of each part.

If Our Brain Is A Realm

- Think of your brain as a realm
 - How would you assign different positions, such as
 - Kings - make decisions
 - Soldiers - keep you safe
 - Generals - remembers old wars, retrieves important information
- to different parts of your brain.



Class Discussion:

Why is that when we get angry, counting to 10 can help us calm down?

Could you explain your thoughts' process here on this picture?

Why is that when we get angry, counting to 10 can help us calm down?

- Focusing on your breathing helps calm the body by slowing your heart rate, lowering blood pressure, and sharpening your thinking.
- Paying attention to breathing supports brain function, breathing could help quiet the amygdala.
- When breathing is intentionally regulated, the brain first prepares to think, then plans its response, which enables us to act responsively.
- As we practice breathing control, our brains develop and reinforce the "habit" that responding to anxiety by focusing on breathing. We reflect rather than respond directly. The more controlled our breathing is, the more self-managing and self-aware we become.

Class discussion:

- Could you share some mindful or unmindful thoughts with your partner?
- Could you explain your thought process based on this picture?

13

Mindful vs unmindful

Mindful examples:
 Trying a food before deciding if you like it or not.
 When you talk with someone, stop what you are doing at that moment.
 Trying not walking and texting.
 Aware of your own feelings and emotions.

What about the opposite actions?

14

Reflection: What can we learn from this game?

- To judge quickly is particularly common in our societies.

Mindfulness allows students to gather important evidence in order to make better judgments.

15

Bring awareness to your routine

- How to bring awareness to your life?
- Eg. Taking shower?
 Brushing teeth?

16



17



Contents

- Last class, we have discussed three key parts of our brains, using the words "mindful and unmindful" to differentiate two types of thoughts' process.
- This class, we will further discuss how to sense our world mindfully.

26

Why Practice Mindful Awareness?

- As we practice mindful awareness, we are getting used to observing details, slowing down, and paying attention.
- Help us enjoy our surroundings
- Help us better understand other's responds (e.g. Facial expressions, body language)
-

28

Class activity: Find Your Own Leaf

- Observe the leaf you get very carefully.
- 5 minutes later, I will mix your leaf with others'.
- The game ends when everyone has found their own leaves.

26

What Does Mindful Seeing Do?

- Observation skill is valuable in many subject areas. Mindful seeing gives them opportunities to explore world in a more thoughtful way.
- How does mindfulness seeing benefit others?

28

Mindful Eating - Raisin

- Using the raisin meditation instruction from Mark Williams's book

26

Benefits From This Activity

- Mindful eating is like conscious breathing. Most of the time we eat and breathe without thinking.
- Most of the time we don't breathe deeply. And, most of the time, we don't really taste what we eat.
- By slowing down and paying attention, we can learn to recognize signals which indicate we are full. Focusing on taste can help students appreciate healthy, unprocessed food flavors.

28

Discussion: Mindful Smelling

- Do you think you can use scent to change your mood?
- Which smell will make you feel relaxed?
- If we can find a relaxing scent, how can it help us remember what we need to know in class? (Connecting with brain science we have learned)

25

Why?

- Our sense of smell link with our amygdala and hippocampus. That's why the smell can change your mood or bring back memories.
- Just by smelling a familiar scent, our brains can remember the people, places or things we are related to. Mindful smelling -- using our sense of smell to learn more about our environment can help us sharply observe our world.

26



27



Contents

- Last class, we have talked about how to mindfully watch, listen, taste, and smell our world.
- We will use this class to explore your thoughts and emotions.

28

Neuroplasticity

- The following breathing activities use the neuroplasticity which is the process of using practice and repeated experience to strength the neuronal connections in our brain(Lazar et al., 2005).



29

Executive Function

- Executive function includes many advanced skills such as evaluating information, organizing, focusing, and problem solving. Since the neural networks of emotional response overlap with the neural networks of executive function in our prefrontal cortex, so when the brain process emotions or executive functioning, the overlapping neural network are strengthened.
- Moreover, researchers found students who could better deal with their emotions also performance better in academic context (Miles & Süpek, 2006).
- In all, recognize and control emotions are fundamental skills for students to have better experience in schools.

28

Breathing Exercises – 3mins Meditation

- Sit in a comfortable position and make sure your shoulders are relaxed.
- Relax your chin. Let your eyelids get heavy. Close your eyes if you want.
- Pay attention to your breathing in and out. Don't try to hold it.
- Feel your stomach go up and down. Keep your tummy soft and relaxed.
- Now try to see if you can breathe slower and deeper.
- If your mind is distracted, pay attention to your breathing.
- Open your eyes slowly, take a deep breath, and smile.

29

When to Use?

- After each class.
- Before bed or wake up in the morning
- Before tests
- While in line
- When you get your classroom.

30

Emotion Identification

- Please name your feelings in each situations
- 1. Getting good grades
- 2. Having fun with my friends
- 3. My classmate teases me
- 4. I could not figure out the questions during the exam
- 5. My parents compliment me
- 6. My parents force me to do something I do not want to do.
-

31

Class Discussion

- Are these situations common to you?
- Are these emotions common to you?
- What's your reactions of these situations?

32

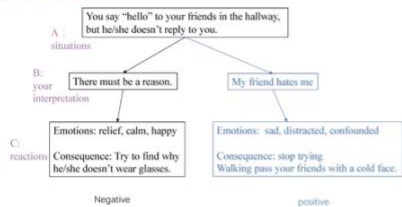
The ABC Models of Emotions

- A: External event (situations)
- B: Beliefs (your interpretation)
- C: Emotions (our reactions)

33

Appendixes

Take a look at this situation:



Activity – the Great Cover-up (from BREATHE)

1. Please choose from the following situation or come up with one in your group (such as a problem with friends, teachers, or parents; the inability to do something well; dissatisfaction with appearance; too much pressure; unrealistic expectations; and so on).
2. Please identify the underlying uncomfortable feelings of chosen situation. Write them on large index cards.
3. Use index cards to list ways that you avoid or try to cover up the uncomfortable feelings that occur in the hypothetical situation.
4. Each group reports on its "problem situation," and the related uncomfortable feelings and cover-ups.

Discussion

- Does the cover-up work?
- Why or why not?
- Is there a cost attached to the cover-up?
- What are the problems that can arise from covering up these feelings?

Most Importantly

"Your thoughts are thoughts. They are your servants. No matter how loud they shout, they are not your master, giving orders that have to be obeyed. This realization gives you immense freedom; it takes you off a hair trigger and gives you the space to take more skillful decisions – decisions that can be made with your mind when it's in full awareness."

– Mark Williams & Danny Penman

Summary

- Our emotions are the reactions of our thoughts.
- However, our thoughts come and go like sounds.
- How to deal with thoughts and emotions in our mind?
- Breath and let it go.





Contents

- Last week, we learned how to handle our thoughts and emotions.
- This week, we will bring our attention back to our body. Learn how to unite our body and brain to work together. Learn how to reduce stress levels and achieve a healthy emotional balance.

22

Intro

- We know these distracted situations that we discussed last week are common in the schools, you might consistently feel stressed or feel angry to yourself or others.
- In fact, our body also reacts on our emotions. When we are stressed, our heart beats get faster and the amygdala gets ready to flight or fight. When you are angry, your heart can beat twice as fast as you are relaxed.
- Just as we learn to control our breathing and focus on our mind, we can also learn to lower our heart rate.

23

Reflection

- What have you learned from this activity?

24

How Long haven't we felt the soles of our feet?

Class Activity: practice mindful walking

- Feel that your body and mind work together
- Lead students to practice mindful walking together

25

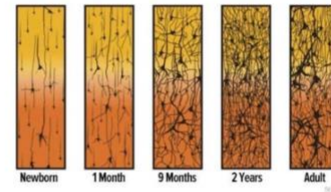
26

What is Optimism

- Optimism is an attitude to see hope and expect success and happiness in one's life.
- Brain studies have shown that optimism is a learned trait rather than a genetic trait.
- Because of neuroplasticity, we can train our brains to have an optimistic view. In repeated experiences and practices, this brain process forms new branching of dendrites and more neuron-to-neuron connections.

36

A Learned Skill



37

Talk to yourself through mirror

- When using self-talk for thinking positively to solve daily setbacks, neuroplasticity creates and strengthens nerve cell (neurons) connections in our brains.



37

When we are optimistic

- Optimism is easy to identify in brain scans. Dopamine's levels rise, and the amygdala is open and information is forwarded to the prefrontal cortex.
- When students remain in a mind state of optimism, they could use their prefrontal cortex to make mindful decisions. When the ideas of failure, frustration or stress arise, optimism could respond to them consciously.

38

Class Discussion

- Will you act differently if you are not optimistic enough or too optimistic?
- Give examples
- Can you give an example of pessimistic thinking?
- Can you give an example of optimistic thinking?

39

Dopamine: Pleasure Chemistry

- Dopamine is neurotransmitters, which produces and regulates positive feelings.
- Brain scans show that dopamine is not only released when we are directly involved in a pleasant experience, but also when we recall these happy moments.

40

Appreciate Happy Experience

- Our brain could not differentiate if we are experiencing good things or if we are recalling happy memories. Both release the same “feel-good” chemicals – dopamine – in our brains.
- We can intentionally recall our favorite memories as a strategy to feel good.
- Benefits:
 1. Foster optimism
 2. Mitigate negative emotions (e.g. boredom, sadness, anxiety)
 3. Stimulate our brain to learn new materials
 4. Generate ideas from past experience
 5. Improve physical health

82

Discussion

- What can we learn from previous brain science?

By repeatedly quoting past successes, we build confidence and are better able to rebuff the “I can’t” voice in our minds. Happy memories can be a tool for the brain to deal with social, academic, and other challenges in students’ lives.

83

Class Activity: Recall Happy Memories

- Take 5 minutes to write a memory that makes you happy. And discuss your stories with your partner.
- If you are a listener, ask questions about the details (people involved, their expressions, the interesting or meaningful actions they did, the weather, the details of the Settings, etc.).
- Then focus all your attention on your happy experiences. Recall the places and people involved. What’s the details in that day (hearing, tasting, watching, smelling...)
- Remember it as playing a mini video in your brain.
- Notice how your body feels.

84

Homework: Kindness Scavenger Hunt

- Explain this homework

85



1. Do a good deed for others
2. Kindness meditation
3. Keep an eye on the happy moments of the coming days and capture the details
4. Weekly journal

• • • •

86



87

Finding kindness in my school

- Anyone wants to share your experience last week?
- Can you guess who is your helper? And why?
- How's your mood and emotions last week?
- Have you changed your feelings towards you receivers and your helper?

97

Discussion

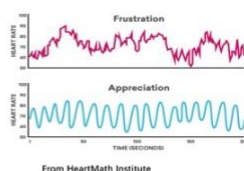
- What did you do last week?
- What does it cost you to act kind behavior?
- Does it take a lot of time to be kind to others?
- Who deserves our kindness to them?
- How do you feel after seeing other people's kind performance?
- Does gratitude motivate you to do good?

98

Appreciation

When we appreciate things and people, our hearts beat slower and our bodies calm down.

Appreciation has strong effects on the brain and body. It can reduce the risk of heart attack and relieve high blood pressure.



From HeartMath Institute

99

Moreover

- The experience of Gratitude release the dopamine into the prefrontal cortex.
- Researchers have found those students who have habits of gratitude, they are more energetic, determined, and concentrated. (Emmons & McCullough, 2003).

Most importantly, they are also more willing to learn new things and have a positive attitude toward schools.

100

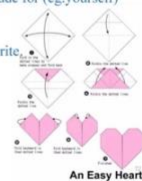
Reflection

- What kind of behaviors should we be grateful for?
 - Please list the ways you can express the gratitude to the one who helps you last week?
- Write it on the card and share with us.

101

Class Activity : A Gratitude note

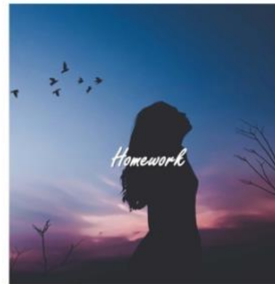
- Take a color paper
- Write down things or somebody you are gratitude for (eg.yourself)
- Make it into a heart shape
- Keep it at somewhere you can see everyday.
- Ask if anyone wants to share what he or she write.



Reflection

- Helping others can improve our mood and make us feel connected to others and things.
- Kindness, optimism and gratitude complement each other.
- Acts of kindness enhance our thinking abilities and help us see a more completed picture of life.

73



- Write a weekly journal.
- The ten-finger gratitude exercise
- Pick two meditations that help you most.
- 3-min meditation

74



Kindness is Contagious !

- Mirror neurons are brain nerve cells that allow the brain to mimic the behaviors of others and to feel the emotions that others experience.
- Think of the time that we see others cut their fingers, or a mother comforts her child.
- Researchers have found those people in a kind and altruistic group have a higher level of dopamine, empathy and compassion. That why we believe kindness is contagious. (Servátka, 2010)

75

How to Use the influence of Kind Act ?

- It might influence your friends, your family first,
- Then to your schools, communities, towns or cities,
- Move to your countries, our earth,
- Finally to the universe.
- Let's think about how we can make a powerful impact on our school or community, or even on another group or cause around the world.

76

Class activity– To the Universe

- Students work collaboratively to plan and execute the act of kindness for schools or larger communities.

77

Appendix B2 MBI Booklet in Chinese

正念练习手册

作者：[作者姓名]
译者：[译者姓名]
出版：[出版年份]

Part one：理解正念练习的意义

正念练习是一种通过觉察当下而实现内心平静的练习。它可以帮助你更好地理解自己的情绪，并学会如何应对压力。正念练习的核心在于“觉察”，即对当下的体验保持开放和好奇的态度。通过正念练习，你可以学会如何与自己的情绪相处，而不是被它们所控制。正念练习可以帮助你建立一种更健康的生活方式，并提高你的生活质量。

Part two：自我觉察与情绪管理

自我觉察是正念练习的核心。它可以帮助你更好地了解自己的情绪，并学会如何应对压力。自我觉察的关键在于“觉察”，即对当下的体验保持开放和好奇的态度。通过自我觉察，你可以学会如何与自己的情绪相处，而不是被它们所控制。自我觉察可以帮助你建立一种更健康的生活方式，并提高你的生活质量。

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Mindfulness (中文名称：正念)

正念是一种通过觉察当下而实现内心平静的练习。它可以帮助你更好地理解自己的情绪，并学会如何应对压力。正念的核心在于“觉察”，即对当下的体验保持开放和好奇的态度。通过正念练习，你可以学会如何与自己的情绪相处，而不是被它们所控制。正念可以帮助你建立一种更健康的生活方式，并提高你的生活质量。

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使用方法

1. 正念练习：通过觉察当下而实现内心平静的练习。它可以帮助你更好地理解自己的情绪，并学会如何应对压力。正念的核心在于“觉察”，即对当下的体验保持开放和好奇的态度。通过正念练习，你可以学会如何与自己的情绪相处，而不是被它们所控制。正念可以帮助你建立一种更健康的生活方式，并提高你的生活质量。

Part one：理解正念练习的意义

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Part two：自我觉察与情绪管理

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Appendix C Consent form



Appendix C1 (Consent form for study 1, student)

Dear students:

You will be asked to take part in a research study investigating the relationship between prosocial behaviour and wellbeing in Chinese adolescents. This form has important information about this study. You will be asked to fill out a survey, which should take about 25 minutes.

Study Title: Study the relationship between prosocial behaviour, academic achievement, popularity, likeability, and wellbeing in Chinese adolescents

Investigator: Wanying Zhou, PhD student at the University of Cambridge [Email address redacted]

Risks and Benefits

You may be uncomfortable with some of the questions. For example, there are questions about circling the most popular students in the class. If you are uncomfortable, you are free to not answer or skip to the next question.

The study results may be used to help other people in the future.

Usage

The results of this study may be used in publications and presentations. Participation in this study is voluntary. You may withdraw from this study at any time. You will not be penalized in any way or lose any sort of benefits for deciding to stop participation. If you decide not to be in this study, it will not affect the relationship between you and schools in any way. Your grades will not be affected if you choose not to let your child be in this study. If you have any questions, please contact the investigator. The contact information is at the beginning of this paper.

Permission

I have read this form and the research study has been explained to me. I have been given the opportunity to ask questions and my questions have been answered. If I have additional questions, I have been told whom to contact. I give permission to attend the study and use my data.

Student's Name (printed) and Signature

Date



Appendix C2 (Consent form for study 1, administrators)

Dear administrators/teachers:

Your students will be asked to take part in a research study about investigating the relationship between prosocial behaviour and wellbeing in Chinese adolescents. This form has important information about this study. They will be asked to fill up a survey, which should take about 25 minutes.

Study Title: Study the relationship between prosocial behaviour, academic achievement, popularity, likeability, and wellbeing in Chinese adolescents.

Investigator: Wanying Zhou, PhD. Student at the University of Cambridge [Email address redacted]

Risks and Benefits

They may be uncomfortable with some of the questions. For example, there are questions about circling the most popular students in the class. These questions are appropriate for students to answer, but they are free to not answer or skip to the next question. The study results may be used to help other people in the future.

Usage

Results of this study may be used in publications and presentations. Participation in this study is voluntary. Students may withdraw from this study at any time.

Permission to conduct this study in your classes

I have read this form and the research study has been explained to me. I have been given the opportunity to ask questions and my questions have been answered. If I have additional questions, I have been told whom to contact. I give permission for my students to participate in the research described above.

Teacher's Name (printed) and Signature

Date



Appendix C3 (Consent form for study 2, students)

Dear students:

You will be asked to take part in a research study about investigating the effectiveness of MBI in students' well-being academic achievement and behaviours. and potential to be invited into the interview sessions.

Study Title: A Comparison of the Differential Effectiveness of Taught and Self-help Mindfulness-based Interventions in Chinese Adolescents

Investigator: Wanying Zhou, PhD. Student at the University of Cambridge [Email address redacted]

Risks and Benefits

You may feel uncomfortable with mindfulness practice or feel bored with the class contents. You will be told what to do when you feel uncomfortable during the courses. The contact information and office number of your mental health teacher are provided. And you can openly discuss your feelings with the MBI instructor and could ask to be sent back to your classroom if you feel uncomfortable.

Usage

The interviews will be recorded in order to analyse the students' answers. This study is designed to learn more about whether the MBI could be potentially used in Chinese middle schools. The study results may be used to help other people in the future.

Permission to

I have read this form and the research study has been explained to me. I have been given the opportunity to ask questions and my questions have been answered. If I have additional questions, I have been told whom to contact. I give permission for my students to participate in the research described above.

Students 's Name (printed) and Signature

Date



Appendix C4 (Consent form for study 2, administrators)

Dear administrators/teachers:

Your students will be asked to take part in a research study about investigating the effectiveness of MBI in students' well-being academic achievement relationship between prosocial behaviour and wellbeing in Chinese adolescences. They will be asked to fill up a survey, which should take about 25 minutes. Some students will be invited to the interview sessions.

Study Title: A Comparison of the Differential Effectiveness of Taught and Self-help Mindfulness-based Interventions in Chinese Adolescents

Investigator: Wanying Zhou, PhD. Student at the University of Cambridge [Email address redacted]

Risks and Benefits

They may be uncomfortable with mindfulness practice or feel bored with the class contents. Participants will be told what to do when they feel uncomfortable during the courses. The contact information and office number of their mental health teacher are provided. And students will be told that they can openly discuss their feelings with the MBI instructor and could ask to be sent back to their classrooms if they feel uncomfortable.

Usage

This study is designed to learn more about whether the MBI could be potentially used in Chinese middle schools. The study results may be used to help other people in the future.

Permission to conduct this study in your classes

I have read this form and the research study has been explained to me. I have been given the opportunity to ask questions and my questions have been answered. If I have additional questions, I have been told whom to contact. I give permission for my students to participate in the research described above.

Teacher's Name (printed) and Signature

Date

Appendix D The protocol

To evaluate the effectiveness of a Mindfulness-based Intervention (MBI) for supporting well-being and positive behaviours and for regulating negative emotions and behaviours in a resource-underserved setting with lesser interruption of the regular curriculum.

Sample: Chinese students from 12 classes in a single middle school participated during timetabled mental health classes in either the taught MBI group (N=129), self-help MBI group (N=116), or control group (N=117).

Program descriptions: The program is largely based on the book "Mindfulness: The Practical Guide to Finding Peace in a Frantic World" (Williams & Penman, 2011), which provides detailed illustrations of MBCT and audio-guided meditation instructions to help readers incorporate mindfulness into daily life. The approval of usage and minor modifications of this book were obtained from the authors prior to the start of the study. The adaptation retained the suggested essential elements of MBPs detailed in previous research (Crane et al., 2017), such that the program comprised three main domains: 1) daily meditation, 2) weekly assignments, and 3) psychoeducation.

Procedure: The setting is chosen as this school has a fixed arrangement for a mental health course, which could easily be replaced with MBI without interrupting the rest of the curriculum. The MBI training is introduced as free of charge and an innovative mental health course delivered by the first author to students over a period of 8 weeks. This course is first presented to the principal and headteachers (teachers in charge of classes) in the MBI conditions because their cooperation was essential to smooth implementation. The aims and contents of each session are described in order to facilitate understanding and strengthen collaboration. The length of each class is 40 minutes, and the group sizes are around 45 in all three conditions. Pre-intervention measurements are collected before the program is launched, and the post-intervention measurements are collected after the 8 sessions of classes.

Methods: A pretest-posttest design is used to assess the MBI for changing well-being, prosocial and difficult behaviours, coping strategies, loneliness, depression, anxiety, and stress level. The taught MBI group is taught 8-sessions of modified Mindfulness-based cognitive therapy (MBCT), replacing their normal lessons, whereas students in the self-help MBI group and control group take the original mental health classes. A repeated measure ANOVA and post hoc comparisons are used to analyse the data. Teacher feedback is collected to explore their opinions of the intervention.

Safety procedure: Since the target population is regular school students, we do not expect any medical emergencies. However, to err on the side of precaution, participants are told what to do when they feel uncomfortable during the courses. The contact information and office number of their mental health teacher are provided. And students will be told that they can openly discuss their feelings with the MBI instructor and could ask to be sent back to their classrooms if they feel uncomfortable. During the intervention, any signs of severe psychological distress will be looked into, and if needed, the person will be sent to the hospital or sent to therapy or a psychiatric consultation.

Overall, the following guidelines shall be followed and monitored in this study:

- 1) A report of the adverse events during the practice shall be made.
- 2) An introduction to the potential negative feelings that students might experience during the exercise shall be given.
- 3) A clinical professional to provide support if the situation demands will always be available.
- 4) Emphasis on mindfulness intervention should be ensured, as a possible approach to help rather than a 'to-go' approach for every student.

Appendix E Questionnaire

Appendix E1 Study 1 in Chinese



学生问卷

亲爱的同学：

你好，非常感谢你参加本次研究。回答本问卷需要 20-30 分钟。

本研究项目由周婉滢（现剑桥大学心理学与教育学方向博士在读）所设计并实施，本实验的目的在于理解初中生的心理健康与他的成绩，亲社会行为，朋友关系，行为动机之间的关系。研究者承诺你的回答会被严格保管，并且仅用于学术研究。

如果你不愿意参加本次研究，请不要填写问卷并在座位上保持安静；

如果你愿意参加本次研究，请根据发到的班级花名册，
填写你的序号 _____

个人信息

性别	年龄	年级
☐ 男 ☐ 女	_____周岁	初一 初二 初三

1. 下列陈述有多少符合你的实际情况，请在对应的框里打 “”

	完全不符合	不符合	略有不符合	中立	稍有符合	符合	完全符合
1. 在大多数方面，我的生活都接近我的理想状态							
2. 我的生活条件非常好							
3. 我对我的生活感到满意							
4. 到目前为止，我已经获得了生活中我想要的事物							
5. 如果人生重新来过一次，我几乎什么都不会改变							

2. 下列陈述有多少符合你的实际情况，请在对应的框里打 “”

	完全不符合	不符合	略有不符合	中立	稍有符合	符合	完全符合
1. 我的生活有目标和意义							
2. 我的社会人际关系具有支持性并对我有益							
3. 我对我的日常活动既投入又感兴趣							
4. 我积极为他人的快乐和幸福做出贡献							
5. 我有能力胜任那些对我重要的事							
6. 我是一个好人，并过着美好的生活							
7. 我对我的未来充满乐观							
8. 人们尊重我							

3. 请根据你拿到的班级学生名单编号，写下符合下列描述的同学编号（例如 1,2,3,4, ...）每题的答案数量没有限制。

	编 号
1.班上愿意帮助他人的人	
2.班上经常打架， 争吵或欺负同学的人	
3.班上遵守规则并 与他人合作的人	
4. 班上喜欢说闲话， 散布流言的人	
5. 班上受到大家喜欢的人	
6. 班上的风云人物	

4. 以下陈述有多少符合你自己的实际情况？

	完全 不符合	不 符合	略有 不 符合	中立	稍有 符合	符合	完全 符合
1. 我在班上受到大家的喜欢							
2. 我是班上的风云人物							
3. 同学们认为我很友善							
4. 我总是人群中的焦点							
5. 同学们愿意和我一起玩							
6. 我们学校很多学生都知道我的名字							
7. 同学们认为我很容易相处							
8. 班上的同学都想成为我的朋友							

5. 请根据你的实际情况，回答你在学校有多经常做以下事情？

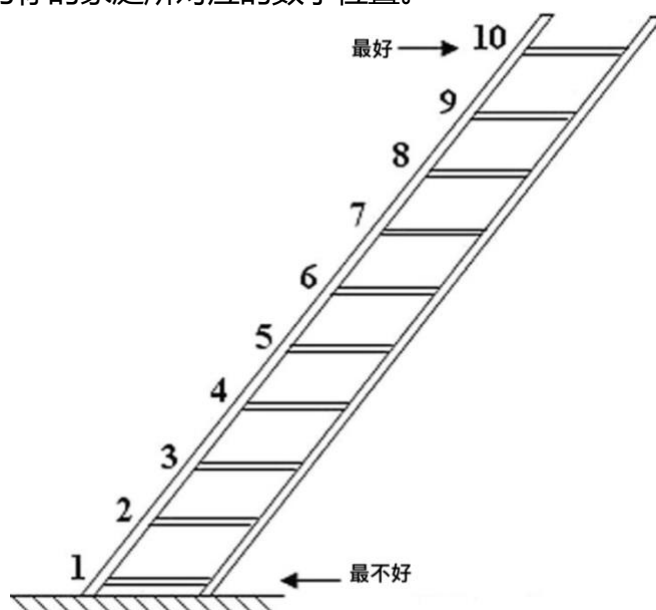
	从不	偶尔	有时	经常	总是
1. 我试图使悲伤的人快乐					
2. 我和我的朋友呆在一起					
3. 我因为要做不喜欢的事情而生气					
4. 我尝试帮助别人					
5. 我很温柔（友善）					
6. 我为无关紧要的事情哭泣					
7. 我和朋友分享我的想法					
8. 我感到懊恼					
9. 我帮助其他同学的学业					
10. 我让别人玩我的玩具					
11. 我会做噩梦					
12. 我喜欢和同学一起玩					
13. 我相信别人					
14. 我咬我的指甲					
15. 我拥抱我的朋友					

6. 想象下面的梯子是整个社会分层

- 在梯子的顶端（10）是那些最富裕的人-
他们有最多的钱，最好的教育，以及最让人尊敬的职业。
- 在梯子的最底端（1）是那些最穷困的人-
他们是最贫穷的，没有什么教育背景，没有工作或者做一些不被人尊重的职业。

现在想一想你的家庭，你觉得你的家庭应该在梯子的哪个位子。

请圈出你认为你的家庭所对应的数字位置。



最后，为了确保所以参与人员的时间不被浪费，研究结果的真实有效。我们希望你如实回答一下两个问题，帮助研究者判断你的回答的可靠性。

我在回答问卷时的专心程度为：

A. 几乎为零 B. 不太专心 C. 有些专心 D. 比较专心 E. 非常专心

诚实地说，我觉得我的回答（ ）被用于本实验。

A. 可以 B. 不应该

本问卷到此结束。

非常感谢您的参与。

Appendix E2 Study 1 in English



Student questionnaires

Dear Students,

Thank you very much for participating in this study. It takes 20-30 minutes to answer this questionnaire.

This project is designed and implemented by Wanying Zhou (a Ph.D. in Psychology and Education at the University of Cambridge), the aim of this experiment is to understand the relationship between the well-being and academic achievement, prosocial/aggressive behaviour and peer relationships. The researcher promises that your answers will be kept safely and will only be used for academic research.

If you are not willing to participate in this study, please do not fill out the questionnaire and keep quiet in your seat.

If you would like to participate in this study, please refer to the class roster sent.

Fill in your serial number _____

Personal Information

gender	age	grade
☐ Male ☐ Female	_____ Years old	☐ Grade7 ☐ Grade 8 ☐ Grade 9

How much do you agree the following statements? please " ✓ " in the corresponding box

	Strongl y disagree	disagree	Slightly disagree	Neither agree nor disagree	Slightly agree	agree	Strongl y agree
In most ways, my life has been close to my ideal.							
The conditions of my life are excellent.							
I am satisfied with my life.							
So far, I've gotten the things I want in my life.							
If I could live my life over, I would change almost nothing							

How much do you agree the following statements? please " ✓ " in the corresponding box

	Strongl y disagre e	disagre e	Slightl y disagre e	Neither agree nor disagre e	Slightl y agree	agree	Strongl y agree
9. I lead a purposeful and meaningful life							
10. My social relationships are supportive and rewarding							
11. I am engaged and interested in my daily activities							
12. I actively contribute to the happiness and well-being of others							
13. I am competent and capable in the activities that are important to me							
14. I am a good person and live a good life							
15. I am optimistic about my future							
16. People respect me							

Please write down the student numbers that match the following descriptions (e.g., 1, 2, 3, 4, ...) according to the class student list number you received. There is no limit to the number of answers per question.

	Number
1. People in the class who are willing to help others	
2. People who often fight, quarrel or bully classmates in the class	
3. People in the class who follow the rules and cooperate with others	
4. People in the class who like to gossip and spread gossip	
5. The class is popular with people you like	
6. People in the class	

How much of the following statement is in line with your own situation?

	Strongly disagree	disagree	Slightly disagree	Neither agree nor disagree	Slightly agree	agree	Strongly agree
9. My classmates like me.							
10. I'm popular in my class.							
11. My classmates like I am nice and kind.							
12. I'm always in the crowd.							
13. My classmates like to play with me.							
14. Many students in our school know my name							
15. My classmates think I am easy to get along with							
16. My classmates want to be my friends							

Please answer how often you do the following things in school according to your actual situation?

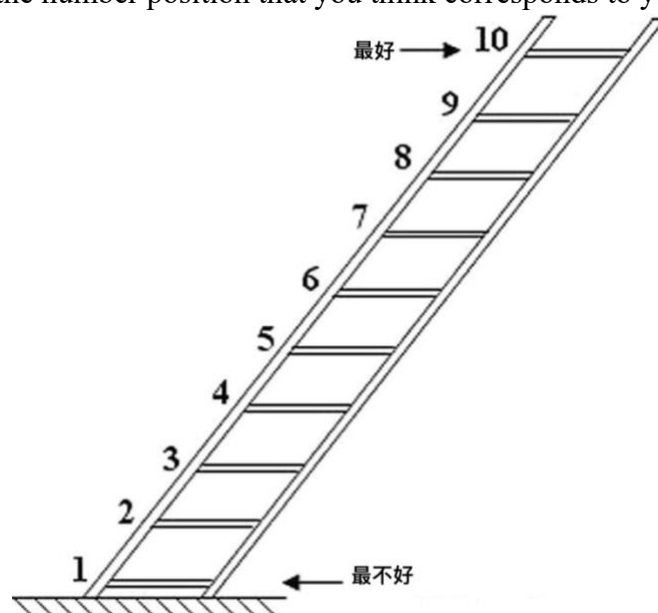
	Never	Occasionally	sometimes	often	always
16. I try to make sad people happier					
17. I spend time with my friends					
18. When I have to do things that I do not like I get mad					
19. I try to help others					
20. I am gentle (friendly).					
21. I cry over things that do not matter					
22. I share things I like with my friends					
23. I feel annoyed					
24. I help other students with their homework					
25. I let others play with my toys					
26. I have bad dreams					
27. I like to play with my classmates					
28. I trust others					
29. I bite my fingernails					
30. I hug my friends					

Imagine the ladder below is the stratification of society as a whole

- At the top of the ladder (10) are the wealthiest – they have the most money, the best education, and the most respectable careers.
- At the bottom of the ladder (1) are the poorest – they are the poorest, have no educational background, have no job or do some unrespected profession.

Now think about your family, where do you think your family should be on the ladder.

Please circle the number position that you think corresponds to your home.



Finally, in order to ensure that the time of all participants is not wasted, the results of the study are true and valid. We hope that you will answer these two questions truthfully to help researchers judge the reliability of your answers.

My level of concentration in answering the questionnaire is:

- A. Almost zero B. Not too attentive to C. Some focus on D. Concentrate a lot
E. Very attentive

To be honest, I feel that my answer () was used for this experiment.

- A. Yes B. No, it shouldn't

This concludes this questionnaire.

Thank you very much for your participation.



Appendix E3 Study 2 in Chinese

学生问卷（前/后测）

亲爱的同学：

你好，非常感谢你参加本次研究。回答本问卷需要 20-25 分钟。

本研究项目由周婉滢（现剑桥大学心理学与教育学方向博士在读）所设计并实施，本实验的目的在于理解初中生的心理健康。研究者承诺你的回答会被严格保管，并且仅用于学术研究。

如果你不愿意参加本次研究，请不要填写问卷,在座位上保持安静；

如果你愿意参加本次研究，
请填写你的学号

个人信息

性别	年龄	是否住校
☐ 男 ☐ 女	周岁	☐ 走读 ☐ 住校 ☐ 其他

过去的几个星期，下列陈述有多少符合你的情况，请在对应的数字框里打“✓”

	从来没有	很少	有的时候	常常	不断的
1. 我对我的未来感到乐观	1	2	3	4	5
2. 我感到自己是有用的	1	2	3	4	5
3. 我感到轻松	1	2	3	4	5
4. 我感到对他人有兴趣	1	2	3	4	5
5. 我感到充满精力	1	2	3	4	5
6. 我能妥善的解决问题	1	2	3	4	5
7. 我能清晰的思考	1	2	3	4	5
8. 我对自己感到满意	1	2	3	4	5
9. 我感觉与人亲近	1	2	3	4	5
10. 我感到自信	1	2	3	4	5
11. 我能决定自己的事情	1	2	3	4	5
12. 我觉得被关爱	1	2	3	4	5
13. 我对新鲜事物感兴趣	1	2	3	4	5
14. 我感到愉悦	1	2	3	4	5

过去的两个星期，当你遇到问题，你有多经常使用以下描述的不同方法，请在对应的框里打“✓”，你的选择没有对错之分。

	从来不这样做	偶尔这样做	有时这样做	常常这样做
1. 透过学习或做事，令自己不要想太多	1	2	3	4
2. 专注努力的解决现在的问题	1	2	3	4
3. 告诉自己：这不是真的	1	2	3	4
4. 从他人那里获得情绪支持	1	2	3	4
5. 放弃处理问题	1	2	3	4
6. 采取实际行动改变现状	1	2	3	4
7. 拒绝相信问题已经发生	1	2	3	4
8. 以交谈释放不愉快的感觉	1	2	3	4
9. 从别人那里获得帮助和意见	1	2	3	4
10. 尝试换个角度去看事情，令他更正面	1	2	3	4
11. 批评自己	1	2	3	4
12. 尝试思考一个策略去解决问题	1	2	3	4
13. 从他人获得安慰和谅解	1	2	3	4
14. 放弃尝试应付困境	1	2	3	4
15. 在发生了的问题里寻在积极的东西	1	2	3	4
16. 那问题开玩笑	1	2	3	4
17. 透过活动（如：阅读，睡觉）另自己不要想太多	1	2	3	4
18. 接受问题已经发生的事实	1	2	3	4
19. 抒发负面情绪	1	2	3	4
20. 尝试寻求他人的建议或帮助去解决问题	1	2	3	4
21. 学习与问题共存	1	2	3	4
22. 努力思考接下来采取哪些步骤	1	2	3	4
23. 为已发生的事情责怪我	1	2	3	4
24. 嘲笑现况	1	2	3	4

下列是人们有时出现的一些感受。请指出你具有那种感觉的频度，并在对应的框里打“√”，你的选择没有对错之分。

举例如下：

你常感觉幸福吗？

如你从未感到幸福，你应回答“从不”，如一直感到幸福，应回答“一直”，以此类推

	从不	很少	有时	一直
1. 你常感到与周围人的关系和谐吗？	1	2	3	4
2. 你常感到缺失伙伴吗？	1	2	3	4
3. 你常感到没人可以信赖吗？	1	2	3	4
4. 你常感到寂寞吗？	1	2	3	4
5. 你常感到属于朋友中的一员吗？	1	2	3	4
6. 你常感到与周围的人有许多共同点吗？	1	2	3	4
7. 你常感到与任何人都不亲密了吗？	1	2	3	4
8. 你常感到你的兴趣与想法与周围的人不一样吗？	1	2	3	4
9. 你常感到想要与人来往、结交朋友吗？	1	2	3	4
10. 你常感到与人亲近吗？	1	2	3	4
11. 你常感到被人冷落吗？	1	2	3	4
12. 你常感到你与别人来往毫无意义吗？	1	2	3	4
13. 你常感到没有人很了解你吗？	1	2	3	4
14. 你常感到与别人隔开了吗？	1	2	3	4
15. 你感到当你愿意时就能找到伙伴吗？	1	2	3	4
16. 你常感到有人真正了解你吗？	1	2	3	4
17. 你常感到羞怯吗？	1	2	3	4
18. 你常感到人们围着你但并不关心你吗？	1	2	3	4
19. 你常感到有人愿意与你交谈吗？	1	2	3	4
20. 你常感到有人值得你信赖吗？	1	2	3	4

过去的几个月，以下陈述有多少符合你现在的实际情况？

	不符合	有时符合	常常符合	总是符合
1.我觉得很难让自己安静下来	1	2	3	4
2.我会感到口干舌燥	1	2	3	4
3.我好像一点都没有感觉到任何愉快、舒畅	1	2	3	4
4.我感到呼吸困难（例如：气喘或透不过气来）	1	2	3	4
5.我感到很难主动去开始工作	1	2	3	4
6.我对事情往往做出过敏反应	1	2	3	4
7.我感到颤抖（例如，手抖）	1	2	3	4
8.我觉得自己消耗了很多精力	1	2	3	4
9.我担心一些可能让自己恐慌或出丑的场合	1	2	3	4
10.我觉得自己对不久的将来没有什么可期盼的	1	2	3	4
11.我感到忐忑不安	1	2	3	4
12.我感到很难放松自己	1	2	3	4
13.我感到忧郁沮丧	1	2	3	4
14.我无法容忍任何阻碍我继续工作的事情	1	2	3	4
15.我感到快要崩溃了	1	2	3	4
16.我对任何事情都不能产生热情	1	2	3	4
17.我觉得自己不怎么配做人	1	2	3	4
18.我发觉自己很容易被触怒	1	2	3	4
19.即使在没有明显的体力活动时，我也感到心律不正常	1	2	3	4
20.我无缘无故地感到害怕	1	2	3	4
21.我感到生命毫无意义	1	2	3	4

请根据你过去几个月的情况，回答以下各题，请从题目右边的三个选项

【不真实】、【有点真实】、或【完全真实】空格中，勾选你觉得合适的答案。

	不真实	有点真实	完全真实
我尝试对别人友善，并关心他们的感受	☐	☐	☐
我不能安定，不能长时间保持静止	☐	☐	☐
我经常头痛、肚子痛或是恶心	☐	☐	☐
我经常与他人分享（食物、游戏、笔等等）	☐	☐	☐
我容易觉得很愤怒，并常发脾气	☐	☐	☐
我宁愿一个人，不愿和同龄人呆在一起	☐	☐	☐
我通常依照吩咐做事	☐	☐	☐
我有很多担忧	☐	☐	☐
如有人受伤、沮丧或感到不适，我都乐意帮忙	☐	☐	☐
当坐着时，我持续不断地摆弄手脚或扭动身子	☐	☐	☐
我有一个或几个好朋友	☐	☐	☐
我经常与别人争斗，使别人依我想法行事	☐	☐	☐
我经常不快乐，心情沉重或流泪	☐	☐	☐
其他与我年龄相近的人一般都喜欢我	☐	☐	☐
我容易分心，不能全神贯注	☐	☐	☐
我在新的环境中会感到紧张，很容易失去自信	☐	☐	☐
我会友善地对待比我年纪小的孩子	☐	☐	☐
我经常被指撒谎或不老实	☐	☐	☐
其他小孩或青少年常针对或欺负我	☐	☐	☐
我经常自愿帮助别人（父母、老师、同学）	☐	☐	☐
我做事情前会思考	☐	☐	☐
我从家中、学校、或别处拿取不属于我的物件	☐	☐	☐
我与成年人相处较与同年纪的人相处融洽	☐	☐	☐
我有许多恐惧。我很易受惊吓	☐	☐	☐
我完成我正在做的事情。我的注意力良好	☐	☐	☐

（请继续填写下一页）

我在回答问卷时的专心程度为：

A . 几乎为零 B . 不太专心 C . 有些专心 D . 比较专心 E . 非常专心

诚实地说，我觉得我的回答（ ）被用于本实验。 A . 可以 B . 不应该
本问卷到此结束。非常感谢您的参与。



Appendix E4 Study 2 in English

Questionnaire (Pre/ Post test)

Dear Students,

Thank you very much for participating in this study. It takes 20-30 minutes to answer this questionnaire.

This project is designed and implemented by Wanying Zhou (a Ph.D. in Psychology and Education at the University of Cambridge), the aim of this experiment is to facilitate students' well-being and school behaviour through MBI. The researcher promises that your answers will be kept safely and will only be used for academic research.

If you are not willing to participate in this study, please do not fill out the questionnaire and keep quiet in your seat.

If you would like to participate in this study, please refer to the class roster sent

Fill in your serial number _____

Personal Information

gender	age	grade
☐ Male ☐ Female	_____ Years old	☐ Grade 7 ☐ Grade 8 ☐ Grade 9

In the past **few months/ past two months**, please type "✓" in the corresponding number box for how many of the following statements match your situation.

	Never	Very little	Sometimes	Often	Constantly
1. I am optimistic about my future	1	2	3	4	5
2. I feel useful	1	2	3	4	5
3. I feel at ease	1	2	3	4	5
4. I feel interested in others	1	2	3	4	5
5. I feel energized	1	2	3	4	5
6. I can solve the problem properly	1	2	3	4	5
7. I can think clearly	1	2	3	4	5
8. I'm happy with myself	1	2	3	4	5
9. I feel close to people	1	2	3	4	5
10. I feel confident	1	2	3	4	5
11. I can decide my own affairs	1	2	3	4	5
12. I feel loved	1	2	3	4	5
13. I am interested in new things	1	2	3	4	5
14. I feel happy	1	2	3	4	5

In the past **few months/ past two months**, when you have encountered problems and how often you have used the different methods described below, please type "✓" in the corresponding box, your choice is not right or wrong.

	I haven't been doing this at all	A little bit	A medium amount	I've been doing this a lot
1. I've been turning to work or other activities to take my mind off things.	1	2	3	4
2. I've been concentrating my efforts on doing something about the situation I'm in.	1	2	3	4
3. I have been saying to myself "this is not real".	1	2	3	4
4. I have been getting emotional support from others.	1	2	3	4
5. I have been giving up trying to deal with it.	1	2	3	4
6. I have been taking action to try to make the situation better.	1	2	3	4
7. I have been refusing to believe that it has happened.	1	2	3	4
8. I have been saying things to let my unpleasant feeling escape.	1	2	3	4
9. I have been getting help and advice from other people.	1	2	3	4
10. I have been trying to see it in a different light, to make it seem more positive.	1	2	3	4
11. I have been criticizing myself.	1	2	3	4
12. I have been trying to come up with a strategy about what to do.	1	2	3	4
13. I have been getting comfort and understanding from someone.	1	2	3	4
14. I have been giving up the attempt to cope.	1	2	3	4
15. I have been looking for something good in what is happening.	1	2	3	4
16. I have been making jokes about it.	1	2	3	4
17. I have been doing something to think about it less, such as going to movies, watching TV, reading, daydreaming, sleeping, or shopping.	1	2	3	4
18. I have been accepting the reality of the fact that it has happened.	1	2	3	4
19. I have been expressing my negative feelings.	1	2	3	4
20. I have been trying to get advice or help from other people about what to do.	1	2	3	4
21. I have been learning to live with it.	1	2	3	4
22. I have been thinking hard about what steps to take	1	2	3	4
23. I have been blaming myself for things that happened.	1	2	3	4
24. I have been making fun of the situation.	1	2	3	4

Please indicate how often you feel that way and hit "✓" in the corresponding box in past **few months/ past two months**, there is no right or wrong in your choice.

Here are some examples:

Do you often feel happy?

If you have never felt happy, you should answer "never", if you have always felt happy, you should answer "always", and so on

	never	seldom	sometimes	always
1. Do you often feel harmonious with the people around you?	1	2	3	4
2. Do you often feel missing a partner?	1	2	3	4
3. Do you often feel that no one can be trusted?	1	2	3	4
4. Do you often feel lonely?	1	2	3	4
5. Do you often feel like you're one of your friends?	1	2	3	4
6. Do you often feel that you have a lot in common with the people around you?	1	2	3	4
7. Do you often feel intimately with anyone?	1	2	3	4
8. Do you often feel that your interests and ideas are different from those around you?	1	2	3	4
9. Do you often feel like you want to connect with people and make friends?	1	2	3	4
10. Do you often feel close to people?	1	2	3	4
11. Do you often feel left out in the cold?	1	2	3	4
12. Do you often feel that your dealings with others are meaningless?	1	2	3	4
13. Do you often feel that no one knows you very well?	1	2	3	4
14. Do you often feel separated from others?	1	2	3	4
15. Do you feel like you can find a partner when you want?	1	2	3	4
16. Do you often feel that someone really knows you?	1	2	3	4
17. Do you often feel shy?	1	2	3	4
18. Do you often feel that people are surrounding you but do not care about you?	1	2	3	4
19. Do you often feel that someone is willing to talk to you?	1	2	3	4
20. Do you often feel that someone is worthy of your trust?	1	2	3	4

In the past **few months/ past two months**, how many of the following statements are in line with your current situation?

	Not really	Sometimes	Often	Always
1. I found it hard to "wind down"	1	2	3	4
2. I was aware of dryness of my mouth	1	2	3	4
3. I couldn't seem to experience any positive feelings at all	1	2	3	4
4. I experienced breathing difficulty (e.g., breathlessness or excessively rapid breathing in the absence of physical exertion)	1	2	3	4
5. I found it hard to work up the initiative to do things	1	2	3	4
6. I tended to over-react to situations	1	2	3	4
7. I experienced trembling (e.g., in the hands).	1	2	3	4
8. I felt that I was using a lot of nervous energy	1	2	3	4
9. I was worried about situations in which I might panic and make a fool of myself.	1	2	3	4
10. I felt that I had nothing to look forward to	1	2	3	4
11. I found myself getting agitated	1	2	3	4
12. I found it difficult to relax	1	2	3	4
13. I felt downhearted and blue	1	2	3	4
14. I was intolerant of anything that kept me from getting on with what I was doing	1	2	3	4
15. I felt I was close to panic	1	2	3	4
16. I was unable to become enthusiastic about anything	1	2	3	4
17. I felt I wasn't worth much as a person	1	2	3	4
18. I felt that I was rather touchy	1	2	3	4
19. I was aware of the action of my heart in the absence of physical exertion (e.g., sense of heart rate increase, heart 'missing a beat')	1	2	3	4
20. I felt scared without any good reason	1	2	3	4
21. I felt that life was meaningless	1	2	3	4

Please answer the following questions based on your situation in the past **few months/ past two months**, from the three options on the right side of the question

	Not True	Somewhat True	Certainly True
Considerate of other people's feelings	☐	☐	☐
Restless, overactive, cannot stay still for long	☐	☐	☐
Often complains of headaches, stomach-aches or sickness	☐	☐	☐
Shares readily with other children (treats, toys, pencils etc.)	☐	☐	☐
Often has temper tantrums or hot tempers	☐	☐	☐
Rather solitary, tends to play alone	☐	☐	☐
Generally obedient, usually does what adults request	☐	☐	☐
Many worries, often seems worried	☐	☐	☐
Helpful if someone is hurt, upset or feeling ill	☐	☐	☐
Constantly fidgeting or squirming	☐	☐	☐
Has at least one good friend	☐	☐	☐
Often fights with other children or bullies them	☐	☐	☐
Often unhappy, down-hearted or tearful	☐	☐	☐
Generally liked by other children	☐	☐	☐
Easily distracted, concentration wanders	☐	☐	☐
Nervous or clingy in new situations, easily loses confidence	☐	☐	☐
Kind to younger children	☐	☐	☐
Often lies or cheats	☐	☐	☐
Picked on or bullied by other children	☐	☐	☐
Often volunteers to help others (parents, teachers, other children)	☐	☐	☐
Thinks things out before acting	☐	☐	☐
Steals from home, school or elsewhere	☐	☐	☐
Gets on better with adults than with other children	☐	☐	☐
Many fears, easily scared	☐	☐	☐
Sees tasks through to the end, good attention span	☐	☐	☐

Finally, in order to ensure that the time of all participants is not wasted, the results of the study are true and valid. We hope that you will answer these two questions truthfully to help researchers judge the reliability of your answers.

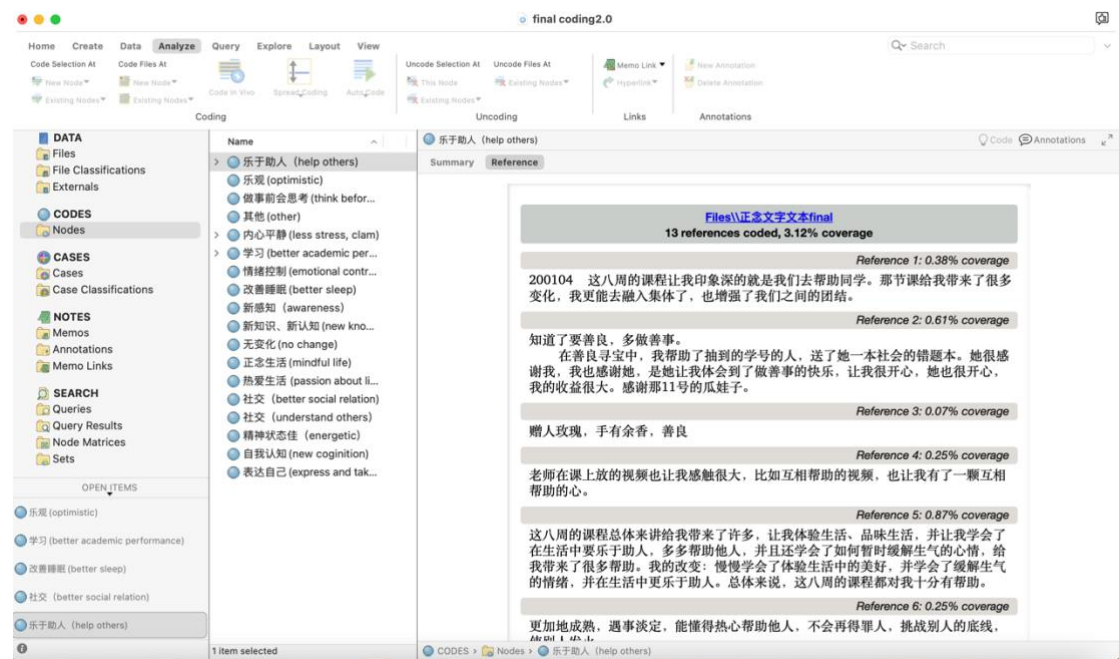
My level of concentration in answering the questionnaire is:

A. Almost zero B. Not too attentive to C. Some attention D. Concentrate a lot E. Very attentive

To be honest, I feel that my answer () was used for this experiment.

A. Yes B. No, it shouldn't

Appendix F Thematic analysis coding in Nvivo



Appendix G Interview Questions for Students & Teachers

For Students (Focus group)

1. Greetings
2. How has the intervention changed you?

How?

Why?

3. Which part helps or less helps you most? Which part you like the most/least?
4. What else do you want to learn or need help in your school life?
5. Any other comments?

For Teachers?

1. Greetings
2. What's your general feelings about this intervention?
3. Comments on the length and content of the course?
4. Your observations of students' changes?
5. The future implementation of this MBI course in your school?

Your suggestions about future implementation?

6. Any other comments?

Appendix H Glossary of Key terms

Term	Definition
Well-being	A combination of feeling good and functioning well. It is a broad term, and it has different focuses under different disciplines and fields.
Happiness	It can be understood as a positive emotion, a long-term satisfaction with life, or referring to an all-round state of well-being.
Subjective well-being (SWB)	It is used to assess whether people are satisfied with their lives and have more pleasant emotions than negative emotions
Psychological well-being (PWB)	It assumes people achieve happiness through discovering their strengths and expressing their ideals
Prosocial behaviour	It is one kind of social behaviour that benefit other people
Aggressive behaviour	It includes any behaviour or act aimed at harming others
Social emotional skills	The skills to regulate thoughts, emotions, and behaviour and help establish and maintain healthy relationships
Likeability	It reflects peer acceptance and social preference, the well-liked kids by their peers.
Popularity	It describes youths who are visible, prestigious, and dominant among their peer groups.
Mindfulness-based Intervention	An intervention aims to improve the behavioural, cognitive, and mental health outcomes through increasing awareness, non-judgement, and being present.