Childhood Adversity, Resilience, and Mental Health: A Sequential Mixed-Methods Study of Chinese Young Adults

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Abstract

Resilience is a key health protective factor for those with adverse childhood experiences (ACEs), but little research has explored how it manifests in early adulthood or across cultures. The purpose of this study was to generate a fuller understanding of resilience and its contribution to the relationships between mental health problems and ACEs among Chinese young adults in Hong Kong. Using a sequential explanatory mixed-methods design, 433 Chinese young adults aged 18-24 years were surveyed online to examine the relationships between ACEs, resilience, and mental health problems (depression, anxiety, maladjustment, and post-traumatic stress symptoms). Among them, 34 participants with ACEs were purposively selected and interviewed to explore cultural factors that influenced their resilience. Quantitative data were analyzed using multiple hierarchical regression analyses; qualitative data were analyzed using a qualitative descriptive approach.

Higher cumulative ACE exposure was associated with higher severity of adjustment disorder and odds for screening positive for post-traumatic stress disorders, but not for symptoms of depression or anxiety. Resilience significantly contributed to explaining variances across all mental health outcomes over and beyond ACEs and in a protective fashion. Four themes emerged from qualitative interviews: (1) *Privacy, emotional restraint, and "saving face";* (2) *Conforming to preserve harmony; (3) A will to excel; and (4) Viewing adversity as a matter of luck.* These findings suggest Chinese young adults' resilience was influenced by cultural norms of restraint, conformity, competition, and superstition. The present study provides a model for future studies using a mixed-methods design to deeply examine resilience among younger people exposed to early adversities within sociocultural, historical, or geographical contexts.

Keywords: Adverse childhood experiences; resilience; mental health, young adulthood; Chinese culture

Early life adversities are pervasive, with nearly 40% of adults worldwide reporting at least one adverse childhood experience (ACE) (Kessler et al., 2010). ACEs refer to a broad set of serious negative childhood experiences that include abuse (emotional, physical, or sexual), neglect (emotional or physical), serious household dysfunction (e.g. witnessing domestic violence, household member substance use, and parental separation and incarceration), and peer, community, and collective violence (World Health Organization, 2016). These early life adversities are now widely recognized as a critical public health concern, as their cumulative and lasting impact may set children on a lifelong trajectory for impaired health and social well-being (Hughes et al., 2017). Currently, relatively little is known about the mental health of young adults exposed to ACEs, which constitutes an important gap in understanding the impact of ACEs across the developmental trajectory (Schilling, Aseltine, & Gore, 2007). Moreover, despite a growing focus on the role of resilience in overcoming early hardships, few studies have explored culture-specific factors that may influence capacities for positive adjustment among ACE-exposed young adults (Ungar et al., 2008). To address these gaps, we utilized a mixed-methods approach to generate a fuller understanding of ACEs, resilience, and mental health outcomes from a sample of young Chinese adults in Hong Kong.

ACEs, Resilience, and Mental Health

The mental health consequences of ACEs (e.g. socioemotional and cognitive impairments) can develop soon after exposure, and are considered likely pathways linking ACEs to other major physical health problems that often manifest much later in life (Mersky, Topitzes, & Reynolds, 2013). Ample evidence has demonstrated that strong, frequent, or prolonged stress response activation from ACEs can lead to atypical neurodevelopment (McCrory, De Brito, & Viding, 2010), which predisposes children to exceptional risks for mental disorders that often manifest by late adolescence (Herringa et al., 2013). In fact, it is estimated that 30% of the global mental disease burden can be attributed to ACEs; eradicating ACEs may also eliminate as much as 37% of anxiety disorders observed among young adults aged 20-29 worldwide (Kessler et al., 2010). However, an equally compelling body of evidence supports resilience as one factor that can help children exposed to ACEs achieve positive growth and adjustment.

Resilience is broadly defined as the ability to survive and thrive despite significant adversity (Earvolino-Ramirez, 2007). The majority of resilience research is grounded in developmental psychology, where it is used to describe children who were exposed to considerable stress and trauma early in life (e.g. abuse and neglect), but were observed to withstand the negative effects of risk exposure and "bounce back" in the face of adversity, thus demonstrating positive growth and adjustment (Windle, 2011). Indeed, many studies showed that later in life, resilient children exhibit lower depression, anxiety, and post-traumatic stress disorder (PTSD) symptoms following ACE exposure compared with their less resilient peers (K. M. Anderson & Bang, 2012; H. H. Lee & Cranford, 2008). It is imperative to understand the factors underlying resilience as it is central to positive adaptation in early stress and trauma. Further, examining resilience as a mental health protective factor in young adulthood is of particular interest given the onset of major mental disorders are most typical during this developmental period compared with any other time in the life course (de Girolamo, Dagani, Purcell, Cocchi, & McGorry, 2012). However, most existing research on youth resilience and mental health were conducted in Western settings (Ungar & Liebenberg, 2011); culture-specific examinations of these relationships in non-Western samples remain scarce.

Childhood Adversity and Resilience in the Chinese Culture

ACEs are pervasive in Chinese populations, with prior studies showing between 31%-94% of Chinese adults report at least one ACE (Li, Cao, Cao, & Liu, 2015; Wei, 2013). Although the wide variations in reported rates may be attributed to the diverse and convenient participant samples across studies, the findings were largely consistent with studies conducted elsewhere, where ACEs were found to associate with poorer health outcomes (Liu, Yang, Shi, Liu, & Wang, 2016; Wei, 2013). Given the occurrence, co-occurrence, and definitions of ACEs may vastly differ by geographic and sociocultural norms (Kessler et al., 2010), an in-depth understanding of how ACEs are experienced and perceived across cultures is essential to determine the health needs and trajectories of people exposed to ACEs in different contexts. To date, little evidence exists on the associations between mental health problems and ACEs in Chinese samples, especially in early adulthood, and none has examined how resilience contributes to

explaining these relationships. Further, little research has adopted qualitative strategies to explore *how* endorsement of different cultural tendencies may promote or hinder resilience, especially outside of a Western context (Ungar & Liebenberg, 2011). In fact, no known study has attempted to disentangle the relationships between resilience and culture at a critical transitional period in the life course (i.e. young adulthood) after ACE exposure in Chinese samples.

The Present Study

The primary goal of this study was to generate a fuller understanding of resilience, mental health problems, and ACEs among Chinese young adults in Hong Kong. Specifically, this study employed a sequential explanatory mixed-methods design to: (1) examine the associations between negative mental health outcomes (i.e. depression, anxiety, maladjustment, and post-traumatic stress symptoms) and ACEs among young adults in Hong Kong; (2) assess the contribution of resilience in explaining the relationships between impaired mental health and ACEs; and (3) explore culture-specific factors that may explain or influence (protect or promote, as well as risk or hinder) resilience in the context of ACEs. We hypothesized that (1) ACE exposure will significantly associate with poorer mental health, and in a gradated fashion; and (2) resilience will significantly contribute to explaining variations in mental health outcomes over and beyond ACEs.

A secondary goal of this study was to provide a model for future studies using a mixed-methods design to deeply examine resilience within sociocultural, historical, or geographical contexts. A lens of critical realism was used to understand how participants perceived their realities; both empirically through quantitative data, and by capturing unobservable subjective mechanisms of personal ideology, value commitments, mental and emotional states, and ways they are situated with others through qualitative means (Maxwell & Mittapalli, 2010).

Methods

A sequential explanatory mixed-methods approach was chosen to capture a general understanding of the main study variables using quantitative data, and to further explain the statistical findings by providing a

detailed understanding of the cultural factors that may influence resilience using qualitative results (Creswell & Plano Clark, 2011). This study was approved by the first author's university ethics review board.

Target Population

Young adults eligible for this study were: i) between ages 18 and 24 years old, ii) enrolled in an undergraduate degree program in one of the two major universities and their affiliated community colleges in Hong Kong; and iii) able to read traditional Chinese.

Phase 1: Quantitative Survey

Subjects and Settings

Participants were recruited via convenience and snowball sampling. Based on medium effect sizes found in prior studies (Teicher, Samson, Polcari, & McGreenery, 2006), approximately 200 participants were needed to achieve a good prediction level for a multiple linear regression model with 6 predictors (Knofczynski & Mundfrom, 2008). To promote sample variability, quota sampling were used to proportionately include young adults enrolled in bachelor's (i.e. university) and associate (i.e. community college) degree programs, hence a minimum target sample size of 100 young adults for each group. Study flyers were distributed around university and community college campuses to recruit participants.

Data Collection and Management

Quantitative data were collected online via *mySurvey v.1.1* (The Hong Kong Polytechnic University, 2016). The online survey was pilot tested with seven participants from the target population before deployment. Interested participants entered the study via a web link printed on study flyers; provision of response to survey items represent implied consent to participate. The online data collection system was set to block repeated participation from the same electronic device to prevent multiple responses from the same participant. No disclosure of identifiable information is required to participate. However, participants were invited to provide an e-mail address and/or telephone number, if they agreed to be contacted again for an interview. There was a total of 585 clicks into the survey webpage between April to June of 2017. Among them, 433 participants met eligibility criteria and provided complete data on ACE exposure; these

participants were included in the final dataset for analysis. Minimal missing data (<3% of dataset) was observed and imputed using mean/mode substitution.

Study Measures

Adverse childhood experiences (ACE) was measured using the WHO ACE-International Questionnaire (ACE-IQ) (World Health Organization, 2016). This instrument measures exposure to 13 categories of ACE: physical abuse; sexual abuse; emotional abuse; physical neglect; emotional neglect; domestic violence; family mental illness; family substance abuse; imprisoned family member; parental separation or death; bullying; exposure to community violence; and exposure to collective violence. Overall exposure to ACE was dichotomized into "Non-exposed" (i.e. no ACE) and "Exposed" (i.e. one or more ACE); cumulative exposure was calculated by adding total categories of ACE exposure and grouped into 0, 1, 2, 3, 4, and 5 or more ACEs. Translation and psychometric evaluation of the Chinese version using this study sample was described elsewhere (Ho, Chan, Chien, Bressington, & Karatzias, 2019). The internal consistency of the Chinese ACE-IQ was satisfactory in this study sample ($\alpha = 0.82$).

Resilience was measured using the 2-item Chinese Connor-Davidson Resilience Scale-2 (CD-RISC2), which was designed to capture the essence of resilience, i.e. the ability to "bounce back" and adapt to change (Connor & Davidson, 2003; Ni et al., 2016). Scale reliability for the current sample was acceptable ($\alpha = 0.70$). Resilience was scored as a continuous variable with a possible range from 0 to 8 (higher score indicates higher resilience), and also categorized into low (score of 0-3), medium (score of 4-5), and high (score of 6-8) based on normative data showing that men and women in Hong Kong provided means scores of 5.17 and 4.91, respectively (Ni et al., 2016).

Depression and anxiety were measured using the 14-item Hospital Anxiety and Depression Scale (HADS) (Zigmond & Snaith, 1983). Depression and anxiety were each measured using seven items scored on a four-point Likert scale from 0-3; higher total score indicates greater distress. The Chinese version of the HADS demonstrated good psychometric properties in a prior study with young adults in Hong Kong (Y. F.

Chan, Leung, Fong, Leung, & Lee, 2010). The internal consistency for the depression and anxiety subscales in this study were $\alpha = 0.73$ and 0.84, respectively.

Maladjustment and current life stressors were measured using the Adjustment Disorder - New Module 20 (ADNM-20) (Glaesmer, Romppel, Brahler, Hinz, & Maercker, 2015). Participants first indicated their past-year exposure to a list of 16 stressful critical life events (i.e. current stressors, such as family conflicts, moving to a new home, and serious accident). Then, participants indicated their experience of 19 adjustment disorder symptom based on the most straining event (e.g. "*I try to avoid talking about the stressful situation whenever possible"* and *"I am nervous and restless since the stressful situation"*) and 1 item on functional impairment using a 4-point Likert scale. Items were summed to create a scale score; higher score indicates higher adjustment disorder symptomatology. The scale was translated into traditional Chinese and back-translated into English per published guidelines (Beaton, Bombardier, Guillemin, & Ferraz, 2000). The internal consistency of ADNM-20 in this sample was excellent ($\alpha = 0.94$).

Post-traumatic stress was measured using the ICD-11 International Trauma Questionnaire (ITQ) (Cloitre, Garvert, Brewin, Bryant, & Maercker, 2013), an 18-item self-report measure of PTSD and Complex PTSD (CPTSD). Responses on a five-point Likert scale ranging from "0 – Not at all" to "4 – Extremely" were scored according to instrument guidelines. Translation and psychometric evaluation of the Chinese version using this study sample are described elsewhere (G. W. K. Ho et al., 2019). In this study, respondents were dichotomized into two groups: (1) no post-traumatic stress, and (2) meeting diagnostic criteria for PTSD or CPTSD.

Participant background was assessed using a demographic form that included: (1) age; (2) sex; and (3) degree program, i.e. bachelor or associate degree.

Quantitative Data Analysis

STATA SE14.1 (StataCorp, 2015) was used to analyze quantitative data, with alpha level of 0.05. All instruments were scored per instrument guidelines and summarized using descriptive statistics. Participant demographic characteristics and their ACE by overall and cumulative exposure were also

summarized. Bivariate relationships between overall ACE exposure with participant demographics, number of current stressors, resilience, and mental health variables were assessed. Multiple regression analyses were conducted to examine the relationships between mental health and ACEs; all models controlled for age, gender, degree program, and number of current stressors. To examine the independent associations between mental health and ACEs, separate regressions of each mental health outcome on overall ACE exposure (i.e. yes/no) or cumulative ACE exposure (i.e. 0, 1, 2, 3, 4, and 5 or more ACEs) were performed. Then, hierarchical regressions were used to assess the distinct contribution of resilience on the relationships between each mental outcome and ACEs. In the first step, control variables and overall or cumulative ACE exposure were entered into the model. Then, resilience was entered in a separate step to determine their impact on ACE coefficients and contributions to the models. Likelihood ratio tests were used to assess whether addition of resilience significantly improved model fit.

Phase 2: Qualitative Interviews

The overarching research question was: *"Among young adults who had adverse childhood experiences, what does resilience look like and what factors promote or hinder resilience?"* Although aspects of culture were not specifically raised, interviewers were sensitive to pick up and prompt exploration of cultural issues. This paper only presents findings associated with culture's influence on resilience.

Participant Selection

Phase 1 participants who reported at least one ACE and agreed to be contacted again were selected using purposive criterion sampling; strata were created based on resilience (high/medium/low) and participant sex (male/female). Participant sampling was stratified by sex because males and females may rely on different factors that foster resilience (Hartman, Turner, Daigle, Exum, & Cullen, 2009). Interviews began with 9 participants with one ACE selected from high, medium, and low resilience groups to pilot and help refine our interview guide. Then, the remaining participants were recruited by descending order of number of ACEs, where participants with the most ACEs from each resilience level were approached first.

Recruitment continued until data saturation/ informational redundancy was reached, i.e. no new information related to resilience was elicited (Sandelowski, 1995).

Data Collection and Management

Individual semi-structured interviews were conducted face-to-face at a time and location convenient for the participant. To ensure interview quality and consistency, all interviews were conducted by three trained interviewers with counseling experience who attended a two-hour workshop on qualitative interviewing prior to data collection. Interviewees were asked to think of a challenging time during their childhood and the strategies or resources that helped them face those challenges. All interviews were conducted in Cantonese Chinese and audio-recorded. A certified translator transcribed all interviews verbatim into traditional Chinese. Any identifiable information was removed from the transcripts, and all electronic files were password protected and only accessible to qualitative team members. When required for analysis and dissemination, translations into English were verified by two qualitative team members who are bilingual English and native Cantonese Chinese speakers.

Qualitative Data Analysis

Data was analyzed in NVivo11 (QSR International, 2010) using a qualitative descriptive approach following conventional content analysis (Hsieh & Shannon, 2005). A first read of all interviews were carried out by the project team (GH, AC, BC) for overall comprehension of the data and to assure interviews were transcribed accurately. Then, to establish credibility (Lincoln & Guba, 1986), three transcripts of participants who scored high, medium, and low resilience were independently coded by two researchers (GH, AC). With the help of another researcher with qualitative expertise (DL), the project team discussed preliminary codes for consensus. Coding for comprehension, synthesis (grouping using constant comparison techniques), and theorizing (grouping into patterns) was iterative with the entire project team (GH, AC, DL, BC) until a preliminary coding scheme was established. Then, three team members (GH, AC, and BC) independently coded the remaining transcripts following the scheme, while remaining open to new emerging patterns. Intermittently, the project team reviewed coding for confirmability and plausibility of synthesis,

and theorization into subcategories and categories (Lincoln & Guba, 1986). Reflexivity was maintained through theoretical memos and coding discussions with at least three project team members. Further, trustworthiness was maintained through in-depth interviews that lasted 45 minutes to 3 hours, prolonged emersion in data analysis, and keeping an audit trail of all analytic decisions (Lincoln & Guba, 1986).

Results

Phase 1: Quantitative Findings

Background characteristics, ACE exposure, and mental health outcomes of the full participant sample (n=433) are shown in **Table 1.** The mean age of participants was 20.16 (SD=1.67), 41% were male, and 50% were associate degree students. Nearly 3 out of 4 participants reported at least one ACE; nearly half (46%) reported 2 or more ACEs. Among those with at least one ACE, the most commonly reported ACE was physical abuse (54%), followed by witnessing domestic violence (41%), parental separation or death (32%), and emotional abuse (27%). Compared to those with no ACE, those with at least one ACE reported significantly higher number of current stressors (M=3.25, SD=1.88 vs. M=2.60, SD=1.42; $t(431)=-3.34$, $p<0.001$) and level of adjustment disorder symptoms (M=42.79, SD=13.49 vs. M=38.61, SD=11.90; $t(431)=-2.90$, $p<0.01$). Those with any ACE exposure were also more likely to screen positive for PTSD/CPTSD (11.49% vs. 3.60%; X^2 (1, N=433)=5.99, $p=0.01$). There were no significant bivariate associations between participant demographic characteristics (i.e. age, gender, and degree programme) and symptoms of depression or anxiety by overall ACE exposure. However, pairwise correlations showed that number of ACEs were significantly weakly associated with symptoms of depression (r=0.10, p=0.039), anxiety (r=0.13, p<0.01), and maladjustment (r=0.25, p<0.001). Significant, moderate inverse relationships were also found between resilience and symptoms of depression (r=-0.39, p<0.001), anxiety (r=-0.49, p<0.001), and maladjustment (r=-0.36, p<0.001), but not with cumulative ACE exposure (p=0.94).

Table 2 presents results of multiple regression analyses where each mental health outcome was regressed on overall or cumulative ACE exposure, adjusting for participant age, gender, degree program, and number of current stressors (Step 1), and addition of resilience as a covariate (Step 2). Overall or

cumulative ACE exposure did not significantly predict depression or anxiety symptoms; maladjustment symptoms and screening positive for PTSD/CPTSD were no longer significantly associated with overall ACE exposure after controlling for age, gender, degree programme, and number of current stressors. However, since the extant literature points to the substantive and theoretical importance of ACE exposure in predicting mental health outcomes, it was retained in the model in Step 2. Further, after accounting for resilience, exposure to at least one ACE was significantly associated with a 3.20 increase in maladjustment symptom scores. Across all models, adding resilience explained an additional 6%-18% of the variation in negative mental health outcomes; it also hampered their associations with the number of current stressors and significantly improved model fit. The standardized coefficients of resilience across linear regression models (not shown) were -0.36 for depression, -0.43 for anxiety, and -0.29 for maladjustment.

When maladjustment symptoms were regressed on cumulative ACE exposure, having five or more ACEs was associated with a 6.05 point increase in adjustment disorder symptom scores compared with those with no ACE (p=0.018). Adjustment disorder symptom severity further increased in a gradated fashion for those with 3, 4, and 5 or more ACEs compared to those with none after accounting for resilience. Separately, the odds of screening positive for PTSD/CPTSD increased by 4.74 times for those with 4 ACEs (p=0.015) and 5.72 times for those with 5 or more ACEs (p=0.013) compared with those without ACEs; the odds further increased to 5.34 (p=0.013) and 7.50 (p=0.005), respectively, after accounting for resilience.

Phase 2: Qualitative Findings

A total of 34 young adults between the ages 18 and 24 years old were interviewed; 18 participants were female, 16 reported high resilience, 12 reported medium resilience, and 6 reported low resilience. All participants reported at least one ACE (range=1-9); 14 participants had 1-2 ACEs, 11 had 3-4 ACEs, 6 had 5-6 ACEs, and 3 had 7 or more ACEs. The most common forms of ACEs were witnessing domestic violence, having a family member with a mental illness, and physical abuse. The qualitative findings are divided into four categories representing the predominant cultural beliefs that appeared to shape participants' perceptions of ACE and their resilience: (1) Privacy, emotional restraint, and "saving face"; (2)

Conforming to preserve harmony; (3) A will to excel; and (4) Viewing adversity as a matter of luck. Participants' direct quotes are followed by a brief description of their gender, resilience level, and number of ACEs in parentheses.

(1) Privacy, Emotional Restraint, and "Saving Face"

The majority of participants shared their experiences of conforming to a prevailing societal norm where they ought to keep their own matters private and to refrain from showing their negative emotions to avoid bringing shame to the family, thus to "save face." As the following participant eloquently described:

> *"I didn't want to look bad in front of others, meaning I don't want others to know I'm actually like that, that so many things had happened to me, so I pretended like there was nothing wrong... I felt that if I say it, others may actually think you are annoying. Especially about my mother passing away, even the school social worker felt my negative energy was so much that I was annoying."* (Female, medium resilience, 5 ACEs)

These notions appeared to be instilled at a young age within the family, and continually reinforced by authority figures outside the home. However, the participants were aware that their behaviors did not coincide with how they actually felt. In the following excerpts, two participants described these experiences with their parents and school teachers:

> *"In the environment that I was brought up in, usually my parents don't really like to see me cry, so usually I would hold it in and not let myself let it out. Their generation feel that if there is anything, they should just swallow it themselves and not let it out. But I'm not like that. I am the type who needs to let it out."* (Female, medium resilience, 1 ACE)

> *"I always forced myself to smile and laugh. Even though I was sad, I must smile. My teacher was pleased finding me smiling every day… She once praised me in front of the class because of this reason. I perceive it as an encouragement, which motivates me to smile when facing hardships despite my negative emotions."* (Female, low resilience, 6 ACEs)

Perhaps it is through these continued social reinforcements to restrain their emotions, to keep their adversities a secret, and to not "*wash your dirty linen in public,*" many believed that they should not seek help for their problems. In some instances, participants were even discouraged by family members to disclose their problems to others, and were pressured to face their troubles on their own:

> *"I didn't know how to handle [my anxiety symptoms], and I tried to hide and avoided being made known to others. I only searched on the Internet… Then, I thought I should seek help from the school social worker. The social worker told me to inform my mom… [My mom] blamed me for disclosing to*

> *people outside the family, instead of her. She (mom) told me [my anxiety] is my own problem and I should adjust it myself."* (Male, low resilience, 2 ACEs)

Of note, we observed that all male interviewees across the resilience spectrum (i.e. high, medium, or low) endorsed ideas of keeping their matters private and "saving face," while the majority of females that endorsed these beliefs reported either medium or low resilience. This suggests that males are more likely to endorse these tendencies universally, while females who supported these cultural attitudes may also find it more difficult to "bounce back" from their adversities.

(2) Conforming to Preserve Harmony

Despite their difficult childhoods, many participants described their desire to conform to and fulfill their family role. Many of their families appeared to abide by a rigid hierarchical structure, where children were often positioned at the bottom of the family hierarchy. This often translated into a lack of democratic participation for children, and that children within families had less voice in matters. As the following participant described:

> *"Even my aunt is like that, she thinks adults have more experiences, so sometimes there are things where you should just listen to them, then it won't be wrong. Because they think you are young and you haven't seen enough, therefore sometimes with some things, even though you can offer an idea, it is not, how to say… not acceptable."*
> (Female, high resilience, 4 ACEs)

Nonetheless, many participants described their strong inclination to respect this social hierarchy and preserve family harmony. In particular, several participants also noted the importance of family loyalty as a matter of Chinese tradition. For example, one male participant described how he would treat his family:

> *"At the end they are your family members… You treat people how you want to be treated, especially when they are your family, meaning they are not an outsider. You may treat an outsider poorly, but you really may not have it in your heart to treat your family members poorly… Because my family is rather traditional. So my father, my family members, they may not show it, because we are Chinese people."* (Male, medium resilience, 5 ACEs)

As an extension for their desire to fulfill their family roles, the participants also described their need to conform to others' expectations, usually to respect, please, or appease authority figures in their lives, despite acting against their own wishes and emotions, in order to promote family harmony. Specifically, many participants expressed strong beliefs about their parents' absolute authority, which led them to perceive all

actions of their parents to be justifiable, and to submit to their parents' ways even if they did not agree with them:

> "*My mother used to be quite harsh and beat me with a stick quite a lot when I was young… I was the first-born and I didn't fight back. Maybe she thought this is the method to raise me. Inside my heart I was not happy but I didn't tell her. I was just upset by myself because I didn't want to say more when I saw her anger… My mother was very explosive. I knew if I said anything we would fight all night and wouldn't get any sleep… I didn't want the both of us to suffer."* (Female, high resilience, 3 ACEs)

Indeed, even though many of the participants reported hardships or violent relationships witnessed within the home, they often remained defensive and tolerant of their parents' irresponsible or abusive behaviors. Surprisingly, the participants who appeared to be passive and submitting to the absolute authority of their parents tended to report medium or high resilience. In contrast, a few participants described instances where they questioned or resisted the absolute authority of their parents, which ultimately resulted in negative consequences:

> *"It's usually after drinking during midnight... That is, [my father] started hitting [my mother] when he came home drunk. (Interviewer: Did you take any action to protect your mother and yourself?) I bit his hand. (Interviewer: What happened after that?) I remember he punched me, but just unintentionally, and I fainted. When I woke up, I saw him still hitting [my mother]."* (Female, low resilience, 6 ACEs)

Although some of the participants who fought against their parents' unjust or abusive behaviors stood by their actions, others appeared to feel conflicted about their decisions to resist or fight back. Thus, we observed that their resilience scores spanned across the spectrum.

(3) A Will to Excel

Despite the early hardships that these participants have experienced, many described their strong desire to succeed in the future. For some, this will to excel was instilled from and nurtured by significant people in their lives, and internalized as an inner source of motivation that continues to strengthen their perseverance and determination to this day:

> "*Maybe because dad and mom always told me to study hard to have a better future even though the circumstances are not that good right now. Also, because I know they went through the Cultural Revolution [in China] and didn't have the opportunity to study, so I know education is very useful."* (Female, high resilience, 4 ACEs)

Although the participants' capacity to overcome their adversities appeared to be enhanced when they possessed a strong will to excel, this was not necessarily reflected in their reported levels of resilience. We observed that, sometimes, some of these participants wanted to excel because they were motivated by competition with peers or siblings:

> *"I started studying really hard… (Interviewer: What do you think contributed to this?) My mother, I don't know why she loves to compare. She always compared me with my sister… with our grades, our report cards. (Interviewer: But you two were in different grades.) But she still compares us based on our effort."* (Male, high resilience, 4 ACEs)

In fact, the majority of participants who described a strong will to excel based on the hopes of winning reported lower resilience scores. For example, one participant with low resilience described his strong will to excel, which created untenable expectations that ultimately became detrimental to his sense of self and long-term outlook for the future:

> *"I started playing sports during senior high school. This made me understand that as long as you are willing to pay the effort, you will excel and become a successful person... And, I worked really hard on running events… approximately 6 to 8 hours of practice every day... I did accomplish a bit in sports. However, I hurt myself because I adopted the wrong method or invested too much time…I wanted to excel and be a perfect person, but I am imperfect."* (Male, medium resilience, 5 ACEs)

Overall, it appeared that a strong belief to excel could, at least temporarily, enhance *or* hinder participants' resilience, depending on the degree to which the participants endorsed this belief. Their capacity to overcome and excel in the long run also seem to be based upon the source of this will to succeed, i.e. whether it stemmed from an innate motivation to achieve versus the determination to "do better than others" so as to not be "looked down upon."

(4) Viewing adversity as a matter of luck

The notion of luck, or lack thereof, played a central role in some of the participants' descriptions of their childhood hardships. Some of these participants, all of whom were female (n=8), expressed gratitude upon reflecting on their childhood adversities. These include feeling lucky that things turned out a certain way, or that they were lucky to have some of the positive things in their childhood (e.g. supportive family or having material resources) even if they may not have recognized them when they were young. Many of these participants described that, in retrospect, many of their early difficulties can now be seen as "blessings

in disguise." Ultimately, this perceived serendipity or perceptions of having "good luck" appeared to have positively shaped their lives:

> "*Actually I feel that I am very, very lucky. My family members were good to me, so maybe I didn't notice it when I was young, but actually I feel more and more that my family is actually really good, they cared for me a lot*." (Female, high resilience, 1 ACE)

However, we observed that having a positive outlook on one's luck does not necessarily mean that one would report higher resilience scores. We surmise that seeing oneself as lucky in retrospect may merely be a self-soothing mechanism when recalling hardships in hindsight, or that it is just one important piece of a complex puzzle that forms their lives, as the following participants described:

> *"Looking back, I really feel lucky being rejected by that guy. I don't think he was really fond of me… I really feel lucky and blessed, even if it is just to comfort myself."* (Female, high resilience, 7 ACEs)

> "*Actually I feel I am lucky, I really believe in this… Actually it all depends on your luck… There's no guarantee with hard work alone, even though hard work is important, but hard work and luck are both important*." (Female, medium resilience, 5 ACEs)

Alternatively, a few participants reported that their childhood adversities had stemmed from "bad luck." Although we found these descriptions in participants among both genders and across the spectrum of reported resilience scores, we observed that many descriptions of having "bad luck" also extended into questioning why they were the ones who had to undergo those hardships, i.e. "why me". For example, when one participant was asked what she thought of her mother's physically abusive behaviors, she responded:

> *"Really not happy. I wondered why I had already behaved well, to the extent that others would appreciate it. But why are these things still happening to me? So I would be really unhappy."* (Female, high resilience, 3 ACEs)

While many of these participants mentioned "bad luck" in passing, we noted a few participants who spoke extensively about having "bad luck", and these participants appeared to unanimously report low resilience scores. Thus, it is possible that a heavy emphasis on fatalism precluded them from perceiving themselves as having the ability to act upon or "bounce back" from adversities as they thought they were completely beyond their control:

> "*My family was divorced. So throughout my childhood I thought I was very unlucky. Why do other relatives and classmates have intact families but not me? Then, I have memories of myself crying a lot when I was growing up, because I really wanted to know what it would feel like if I had a mother*

at home… I'm not just focused on not having a mother, it's just why is it the whole world is so happy and fortunate, but I'm like this." (Male, medium resilience, 1 ACE)

Viewing childhood experiences as a matter of luck was a common notion among our interviewees. Although both male and female participants mentioned luck throughout their descriptions of adversities, only female participants described themselves as "lucky" in retrospect and that their adversities were "blessings in disguise." Further, our findings suggest that while having "good luck" may not necessarily be crucial to building resilience, having a strong emphasis on one's "bad luck" may inadvertently diminish one's resilience.

Discussion

Our findings suggest ACEs are highly prevalent among young adults in Hong Kong (i.e. 74% of respondents had at least one ACE). Contrary to our hypotheses and previous work (Mersky et al., 2013; Schilling et al., 2007), we did not find significant associations between ACE exposure and depression or anxiety symptoms after controlling for pertinent participant characteristics. Several possible explanations are offered. First, our student sample may represent a comparatively higher functioning group of young adults as they were recruited from a tertiary education setting; those who were most strongly affected by their ACEs (i.e. high depression and anxiety) may not have been captured in this student sample. Alternatively, previous studies showed that anxiety and depression are unequivocally high among Hong Kong tertiary education students (Song et al., 2008; Wong, Cheung, Chan, Ma, & Wa Tang, 2006), thus their associations with ACE exposure may be less apparent in this population. However, our findings did point to significant associations between ACE exposure with less common but potentially more severe mental health problems, i.e. Adjustment Disorder and PTSD/CPTSD. Lastly, it is possible that mental health problems as consequences of ACEs manifest differently under the Chinese cultural context. For example, the mental health impacts of ACEs may not yet become apparent by early adulthood for Chinese youths. Thus, more research is needed to understand whether and how onset of mental disorders associated with ACE exposure may differ in this population. Further, Asian youths generally report lower rates of mood problems while having higher tendencies to somaticize their psychological disturbances compared with their Western

counterparts (E. R. Anderson & Mayes, 2010). Indeed, our qualitative findings suggest Chinese cultural tendencies to restrain emotions, protect privacy, and "save facing" may preclude participants from fully disclosing negative mood in the quantitative survey.

As hypothesized, resilience significantly contributed to explaining variance across all mental health outcomes among our sample of Chinese young adults over and beyond ACE exposure, thus underscoring the importance of including resilience as a predictor when examining the impact of ACEs on mental health. In fact, our findings suggest that, at least for Chinese young adults, resilience is a more salient predictor of mental health outcomes than ACEs. Our qualitative findings further elucidated the contextual factors (i.e. traditional norms and beliefs) that influence these young adults' resilience in the Chinese culture. For example, many of our qualitative participants described experiences of keeping their ACEs private to avoid bringing shame to their family. As a result, many did not, or were even told not to, seek professional help. These findings align with traditional Chinese notions where children are expected to respect and obey their parents, and to protect and preserve family honor (Y. C. Chan, Lam, & Shae, 2011; Shek, 2004). In this study, we observed that the efforts to maintain privacy, protect family honor, and "save face" were generally endorsed by female participants with lower resilience, but did not appear to vary for males across the resilience spectrum. Thus, more research is needed to understand how gendered differences in endorsement of specific cultural ideals may promote or hinder resilience. Further, how culture influences the propensity to seek help, and whether and how it impacts health outcomes in the long-run remains to be explored.

Among our interviewees, those who willingly submitted to their parents' demands and abuse, and passively succumbed to their childhood hardships unanimously reported higher levels of resilience. Indeed, filial piety (i.e. the unconditional respect and support for parents) is foundational to preserving family harmony in Chinese families (Yeh & Bedford, 2003). Additionally, the core Confucian belief that one ought to learn to persevere and tolerate adversity (Shek, 2004) may support these young adults' tenacity to overcome their negative experiences. Thus, in direct contrast to previous discussions, where resistance to convention were proposed to be a culturally valid predictor of resilience among Black youths (Ungar et al.,

2008), our results suggest the ability to endure and conform during hardships may be the hallmarks of resilience for Chinese young adults.

The majority of our qualitative participants demonstrated two prominent culture-based characteristics – a tendency to hide or suppress their negative emotions, and a strong desire to excel. Although prior studies suggest emotional restraint and the commitment to excel are normative in Chinese cultures and do not necessarily dictate poorer outcomes (Poon & Wong, 2008; Soto, Perez, Kim, Lee, & Minnick, 2011), we observed that these factors appeared to hinder participants' resilience when they stemmed from a fear of being "looked down upon" by others. These findings build on existing knowledge on the relations between endorsement of cultural tendencies and wellbeing among Chinese youths (Shek, 2004), and demonstrate that *how* they do so (i.e. the motivations behind supporting these cultural notions) may also be salient to building or diminishing their resilience. Our results suggest interventions designed to promote resilience in Chinese populations may benefit from placing a heavier emphasis on developing intrinsic motivation and self-esteem, especially among emerging adults who are still forging their own life trajectories.

Lastly, we uncovered the perception of "luck" as a potential mechanism that influences Chinese young adults' resilience in the face of early hardships. Much research demonstrates that Asians are more likely to have superstitious beliefs about luck, and are more likely to attribute success to their circumstances as opposed to themselves compared with their Western counterparts (Y.-T. Lee & Seligman, 1997). Our qualitative findings showed that those who perceived themselves as having "good luck" or were able to identify serendipitous encounters within their adverse childhoods appeared to have better emotional wellbeing. These descriptions are in line with the Chinese notion of "fatalistic volunteerism," where one accepts their adverse circumstances, yet actively forebears those difficulties and reframes those challenges as opportunities to test one's strength (R. P. Lee, 1995). In fact, some research suggests that the acceptance and passive resignation to trauma and adversity is a resilient response in non-Western cultures (Buse, Bernacchio, & Burker, 2013). In this study, we found those who discussed this positive outlook did not necessarily report higher resilience, but those who possessed a strong, negative fatalistic mentality,

particularly those who focused on one's "bad luck" and questioned "why me," tended to report lower resilience. These results indicate superstition and fatalism are integral to Chinese young adults' descriptions and understandings of their early life adversities, and suggest the importance of developing self-agency in order to promote resilience among ACE-exposed Chinese youths.

Three study limitations are acknowledged. First, convenience and snowball sampling used in the quantitative phase may limit generalizability of findings. As discussed, results from our student sample may not be generalizable to other Chinese young adult, especially those outside of a tertiary education setting. Second, the cross-sectional nature of quantitative data precludes drawing inferences about effects of ACEs and resilience on mental health problems over time. We were also unable to account for the temporal nature of the data, where ACEs were capture through recall and associated with current resilience and mental health outcomes. Third, there are variables related to mental health and resilience that were not included in this study (e.g. social/ family background, socioeconomic data, peer and social support). Nonetheless, our mixed methods design generated novel findings about resilience specific to ones' cultural context. Our use of a critical realist lens also uncovered potential cultural mechanisms that influence resilience, and serve as a model for future studies to deeply examine resilience across contexts and settings.

Resilience plays a central role in protecting the mental health of young adults. The present study identified specific Chinese cultural norms and beliefs as potential mechanisms that influence young adults' resilience in the context of ACEs. Given the pervasiveness of ACEs, it is important to design culturally-informed interventions to promote resilience to buffer the negative outcomes associated with these early hardships. Our in-depth cultural examination suggests Chinese young adults' resilience are influenced by norms of emotional restraint, conformity, competition, and superstition. Thus, Chinese youths, including children and adolescents currently experiencing adversities, would likely benefit from interventions that promote their help-seeking behaviors, intrinsic motivation, self-esteem, and self-agency to develop their ability to "bounce back" from adversities. For example, these interventions must consider how resilience manifests differently in Chinese youths (i.e. tolerance and endurance as opposed to resistance) when

designing strategies to target its promotion (e.g. enhance cognitive and behavioral flexibility early in life to build tolerance, self-esteem, and help-seeking behaviors). Future research may further refine these findings by examining resilience from more diverse samples, such as across genders, over time, and among high-risk youths from different socioeconomic backgrounds, within Chinese societies.

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Table 1. Participant Characteristics, Mental Health, and ACE by Overall ACE Exposure

	Full sample (*N* =433)		**No ACE (*n* =111)**		**At least 1 ACE (*n* =322)**	
Participant Characteristics						
Mean age in years *($\bar{x}$, SD)*	20.16	(1.67)	20.35	(1.74)	20.10	(1.64)
Male *(n, %)*	178	(41.11)	48	(43.24)	130	(40.37)
Degree *(n, %)*						
Associate	218	(50.34)	51	(45.95)	167	(51.86)
Bachelor	215	(49.65)	60	(54.05)	155	(48.14)
Number of current stressors *($\bar{x}$, SD)**	3.09	(1.79)	2.60	(1.42)	3.25	(1.88)
Resilience (CD-RISC2) ($\bar{x}$, *SD*)	4.99	(1.41)	4.81	(1.31)	5.05	(1.44)
Current Mental Health						
Depression (HADS-D) ($\bar{x}$, *SD*)	6.91	(3.41)	6.68	(3.18)	6.99	(3.49)
Anxiety (HADS-A) *($\bar{x}$, SD)*	9.20	(3.70)	9.08	(3.61)	9.25	(3.73)
Maladjustment (ADNM-20) *($\bar{x}$, SD)**	41.71	(13.21)	38.61	(11.90)	42.79	(13.49)
PTSD/CPTSD (*n, %*)*	41	(9.69)	4	(3.60)	37	(11.49)
ACE Exposure						
Cumulative ACE exposure *(n, %)*						
0	111	(25.64)	111	(100.00)	-	-
1	122	(28.18)	-	-	122	(37.89)
2	65	(15.01)	-	-	65	(20.19)
3	54	(12.47)	-	-	54	(16.77)
4	51	(11.78)	-	-	51	(15.84)
5+	30	(6.92)	-	-	30	(9.32)
ACE category *(n, %)*						
Emotional Neglect	68	(15.70)	-	-	68	(21.12)
Physical Neglect	19	(4.39)	-	-	19	(5.90)
Physical Abuse	173	(39.95)	-	-	173	(53.73)
Emotional Abuse	88	(20.32)	-	-	88	(27.33)
Sexual Abuse	57	(13.16)	-	-	57	(17.70)
Family Substance Use	14	(3.23)	-	-	14	(4.35)
Family Incarceration	13	(3.00)	-	-	13	(4.04)
Family Mental Illness	72	(16.63)	-	-	72	(22.36)
Parental Death or Separation	103	(23.79)	-	-	103	(31.99)
Domestic Violence	132	(30.48)	-	-	132	(40.99)
Bullying	27	(6.24)	-	-	27	(8.39)
Community Violence	7	(1.62)	-	-	7	(2.17)
Collective Violence	20	(4.62)	-	-	20	(6.21)

*Statistically significant difference between those with no ACE and at least one ACE at $p<0.05$.

Table 2. Relationships between Adverse Childhood Experiences and Mental Health Outcomes (N=433)

	Depression Coefficient (SE)		**Anxiety** Coefficient (SE)		**Maladjustment** Coefficient (SE)		**PTSD/CPTSD** Odds Ratio (SE)	
Predictors	Step 1	Step 2	Step 1	Step 2	Step 1	Step 2	Step 1	Step 2
Overall ACE Exposure								
Age	0.12 (0.11)	0.09 (0.11)	0.07 (0.12)	0.03 (0.11)	1.01 (0.42)*	0.90 (0.39)*	1.30 (1.63)*	1.28 (0.17)
Gender (Ref: Male)	-0.35 (0.32)	-0.67 (0.30)*	0.38 (0.34)	-0.03 (0.30)	2.24 (1.16)	1.25 (1.11)	1.13 (4.12)	0.92 (0.35)
Degree (Ref: Associate)	-1.19 (0.38)**	-1.15 (0.35)**	-0.50 (0.40)	-0.45 (0.36)	-0.61 (1.39)	-0.48 (1.32)	0.60 (0.27)	0.64 (0.30)
Number of current stressors	0.60 (0.09)**	0.46 (0.08)**	0.84 (0.09)**	0.67 (0.08)**	3.17 (0.32)**	2.74 (0.31)**	1.51 (0.13)**	1.43 (0.13)**
ACE Exposure (Ref: No)	-0.11 (0.36)	0.18 (0.34)	-0.41 (0.38)	-0.02 (0.34)	2.27 (1.31)	3.20 (1.25)*	2.63 (1.46)	2.96 (1.67)
Resilience	---	-0.87 (0.11)**	---	-1.12 (0.11)**	---	-2.71 (0.39)**	---	0.58 (0.08)**
Adjusted R^2/ Pseudo R^2	0.11	0.23	0.16	0.33	0.21	0.29	0.13	0.19
Model comparison; *LR $Chi^2(1)$*	---	64.04**	---	98.53**	---	45.61**	---	17.40**
Cumulative ACE Exposure								
Age	0.12 (0.11)	0.08 (0.11)	0.06 (0.12)	0.02 (0.11)	0.97 (0.42)*	0.85 (0.40)*	1.28 (0.17)	1.27 (0.17)
Gender (Ref: Male)	-0.34 (0.32)	-0.66 (0.30)*	0.37 (0.34)	-0.04 (0.30)	2.20 (1.16)	1.20 (1.11)	1.06 (0.39)	0.85 (0.33)
Degree (Ref: Associate)	-1.20 (0.38)**	-1.16 (0.36)*	-0.52 (0.40)	-0.48 (0.36)	-0.67 (1.39)	-0.59 (1.32)	0.54 (0.25)	0.59 (0.29)
Number of current stressors	0.59 (0.09)**	0.44 (0.09)**	0.81 (0.10)**	0.63 (0.09)**	2.97 (0.34)**	2.52 (0.33)**	1.43 (0.14)**	1.35 (0.14)**
ACE Score (Ref: 0)								
1	-0.15 (0.42)	0.14 (0.40)	-0.47 (0.45)	-0.08 (0.40)	1.60 (1.54)	2.54 (1.47)	2.48 (1.53)	2.97 (1.86)
2	0.04 (0.51)	0.16 (0.47)	-0.73 (0.54)	-0.58 (0.48)	1.49 (1.85)	1.86 (1.75)	1.01 (0.81)	0.99 (0.80)
3	-0.39 (0.54)	0.12 (0.51)	-0.31 (0.57)	0.22 (0.51)	2.58 (1.97)	3.85 (1.87)*	1.59 (1.20)	2.03 (1.55)
4	-0.02 (0.55)	0.39 (0.52)	-0.22 (0.58)	0.31 (0.52)	3.08 (2.00)	4.37 (1.91)*	4.74 (3.04)*	5.34 (3.59)*
5+	09 (0.70)	0.42 (0.66)	0.24 (0.74)	0.67 (0.66)	6.05 (2.56)*	7.09 (2.43)**	5.72 (4.01)*	7.50 (5.42)**
Resilience	---	-0.87 (0.11)**	---	-1.13 (0.11)**	---	-2.75 (0.39)**	---	0.57 (0.08)**
Adjusted R^2/ Pseudo R^2	0.10	0.22	0.15	0.33	0.21	0.29	0.16	0.23
Model comparison; *LR $Chi^2(1)$*	---	63.91**	---	101.29**	---	47.23**	---	18.41**

*Significant at $p<0.05$; **Significant at $p<0.01$