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Adverse Childhood Experiences Among Chinese Adults: Patterns and Comparison Between Adults Who Grew up as Single and Left-Behind Children

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**Adverse Childhood Experiences Among Chinese Adults: Patterns and Comparison
Between Adults Who Grew up as Single and Left-Behind Children**

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Graduate School of Clinical Psychology

George Fox University

in partial fulfillment

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Doctor of Psychology

in Clinical Psychology

Newberg, Oregon

Will Chinese adults who grew up as single-children or left-behind children,
differ in ACE scores?

Yuan Qu

has been approved

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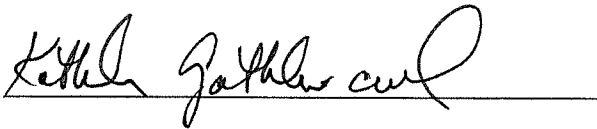
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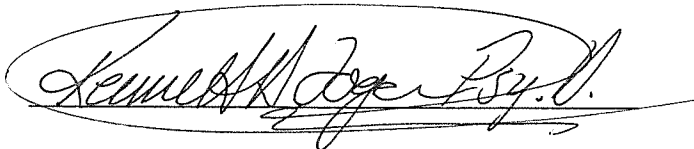
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Abstract

Over the last 40 years, China implemented many socioeconomic policies, among which the “open-door” and “single-child” policies were two of the most noteworthy. Therefore, in China, the study of child maltreatment requires understanding the impact of family constellation changes that resulted from national policies. This study sought to examine adverse childhood experiences (ACE) differences among Chinese adults who grew up as left-behind children (LBC) and single-children (SC). In addition, as a response to the Ho et al. (2019a) call for “further investigations on cultural specific patterns of ACEs” (p. 187), this study examined patterns of ACEs among the Mainland Chinese participants. The sample consisted of 140 Chinese adults (ages 18 - 44 years) residing in Mainland China, with 70 identified as LBC and 70 as SC. Of the participants, 68 were male, and 72 were female. Participants were recruited via a Mechanic Turk. Each participant received monetary remuneration for completing demographic questionnaire and the Adverse Childhood Experiences International Questionnaire (ACE-IQ). The results did not support the hypothesis that people who grew up as LBC experience more ACEs than those who grew up as SC. The results highlighted that SC are just as vulnerable as LBC in experiencing childhood adversities. In addition, this study revealed three distinct ACE class patterns within this sample. The first class, with the lowest ACEs, showed a pattern of parental discord in which people who experienced parental death, separation, or divorce were also likely to report experiencing emotional neglect. The second class revealed a pattern of environmental discord in which people who frequently witnessed collective violence also had a high probability of experiencing emotional and physical neglect. The last class accounted for the smallest percentage of participants and demonstrated a pattern of elevated ACEs across multiple

categories. Except for the last class, the first two classes differ significantly from the Ho et al. (2019a) findings. The ACE patterns from this Mainland Chinese sample shed light on the unique history of Mainland China for the past four decades and its impact on childhood adversities.

Keywords: adverse childhood experience-international questionnaire, Mainland China, China, childhood trauma, child maltreatment, ACEs, ACE-IQ, left behind, single child

Table of Contents

Approval Page	ii
Abstract	iii
Table of Contents	v
Table of Tables	vii
Table of Figures	viii
Chapter 1	1
Child Maltreatment in China	1
Changes in Chinese Family Constellation	2
Single-Child	2
Left-Behind Children	3
Measurement of Childhood Maltreatment	4
Patterns of Adversity in Chinese Adults from Hong Kong	6
Current Study	7
Hypothesis of the Present Study	7
Chapter 2 Methods	7
Participants	7
Materials	8
Informed-Consent Forms	8
Demographic Questionnaire	8

Adverse Childhood Experiences International Questionnaire (ACE-IQ)	9
Procedure	11
Chapter 3 Results	11
ACEs in the Total Sample	11
ACEs of Left-Behind and Single Children	14
Two-step Cluster Analysis Results	16
Chapter 4 Discussion	20
Implications	24
Limitations	25
Future Research	26
References	27
Appendix A Sample Size Calculations	32
Appendix B Informed Consents	33
Appendix C Demographic Questionnaires	35

Table of Tables

<u>Table 1. ACE Prevalence Rates by Score for the Ho et al (2019a) and Current Sample.</u>	12
<u>Table 2. ACE Prevalence Rates by Category for the Total Sample, Left-Behind, and Single Children.</u>	13
<u>Table 3. ACEs Mean Scores Endorsed by Younger and Older, Men and Women, and Left Behind (LBC) and Single Child (SC) Childhood Experiences.</u>	14
<u>Table 4. ACE Prevalence Rates by Category for the Left-Behind (LBC) and Single Children (SC).</u>	15
<u>Table 5. Correspondence of Group Assignments by the 3-Cluster and 4-Cluster Models.</u>	17
<u>Table 6. A Comparison of ACE Prevalence Rates by Category for Groups 1, 2, and 3 From the Ho et al (2019a) and Current Samples.</u>	18

Table of Figures

Figure 1. Item-Response Probabilities for the 13 ACEs Across Three Classes (from Ho et al, 2019a) 19

Figure 2. Item-Response Probabilities for the 13 ACEs Across Three Clusters for LBC and SC From the Current Sample..... 19

**Adverse Childhood Experiences Among Chinese Adults: Patterns and Comparison
Between Adults Who Grew up as Single- and Left-behind Children**

Chapter 1

Child Maltreatment in China

The World Health Organization (2020a) defined child maltreatment as the physical and or emotional mistreatment of children under 18 years of age. Although a global phenomenon, child maltreatment is influenced by child-rearing practices specific to a given country (Korbin, 1987). In response, researchers have sought to understand child maltreatment and how it manifests in different countries. Results from studies conducted in China indicated heterogenous childrearing practices, yet all recognized that child maltreatment is a common phenomenon (Fang et al., 2015; Fu et al., 2018; Wong et al., 2009). Wong et al. (2009) studied the prevalence of child maltreatment among high school students in Guangzhou, China. They highlighted that among various forms of maltreatment, psychological aggression is most frequently reported, and they reported nearly 80% of participants had experienced some form of parental physical maltreatment. The study conducted by Fang et al., (2015) estimated physical abuse was the most prevalent form of maltreatment with a 26.5% reported rate, followed closely by neglect at 26%. Emotional abuse and sexual abuse were less frequent, with rates of 19.6% and 8.7%, respectively. In a more recent study, Fu et al. (2018) conducted a meta-analysis of 32 articles to study the pooled prevalence of maltreatment experiences among college students from a total of 14 provinces in China. Contrary to previous studies, Fu et al. (2018) estimated childhood emotional and physical neglect are the most common forms of maltreatment, occurring at rates of 60% and 54.9%, respectively. To explain the higher maltreatment rates reported, Fu et al. (2018) recognized both Wong et al. (2009) and Fang et al. (2015) had included children in their

studies, and they speculated exposure duration and measurement tools to be the driving force for the differences found in prevalence rates.

Changes in Chinese Family Constellation

Over the last 40 years, China implemented many socioeconomic policies, among which the “open-door” and “single-child” policies were two noteworthy public policies. Following the implementation of these policies, Chinese families have undergone drastic changes in its constellation, structure, and child-rearing practices that altered parent-child relationships as well the quality of parental care (Settles et al., 2012). Whitaker and Rogers-Brown (2019) noted child maltreatment occurs largely in the context of family where inappropriate or a lack of parenting and caregiving took place. Taken together, in the context of China, it is necessary to understand the impact of family constellation changes on child maltreatment.

Single-Child

In 1971, to slow down population growth, China introduced a national family planning campaign that encouraged “later marriages, longer birth interval, and less children” (Feng et al., 2014, p. 18). In 1979, China implemented the one-child family planning policy to further curve the population growth (Lee, 2012). With combined strength of the campaign and policy enforcement, fertility rate declined and so did family size (Feng et al., 2014). Besides successfully reducing the expected population growth by 400 million, it also led to many changes in Chinese society and family structures. By 1990, a two-parent and one child family structure comprised more than 90% of all Chinese families, especially in urban areas. Feng et al. (2014) also point out these policies brought about changes to intra-family relationships. Traditionally, Chinese families revolved around their elders. Nowadays, family’s focus is on their only child. Children received unprecedented care and investment, motivated by the perception that they are the only hope and will resume responsibility to care for their families in

the future. With this mindset, parents spent more leisure time with their only child to ensure their child's needs were met (Feng et al., 2014). Moreover, Feng et al. (2014) posited that the fear of losing an only child propels parents to be overprotective and attentive to their child. In a culture which has traditionally preferred male offspring, Lee (2012) recognized the one-child policy facilitated breakthroughs in gender equality. For example, in one-child families, daughters no longer have to compete for attention and opportunities with male siblings, which has led to less maltreatment, improved education opportunities, and a higher value for female children.

Left-Behind Children

In 1978, to recover from a severe economic recession following the cultural revolution, the Chinese government implemented a series of economic reform policies, later known as the “open-door” policy, to improve trade and industry (Quach & Anderson, 2008). While the open-door policy facilitated rapid economic growth in China, it also caused disparity in economic development between rural and urban areas (Wen et al., 2019). Due to the unequal employment opportunities, a vast number of rural residents migrated to cities for jobs, leaving their children at home under the care of grandparents, relatives, or even themselves (Wen et al., 2019). Due to limited financial resources and movement restrictions imposed by residential registration, parents face tremendous number of obstacles to have their children reside with them in the city of their employment. Given the absence of parental care and insufficient supervision from their guardians, these left-behind children were often subjected to neglect and were “at risk for poor nutrition, accidents and injuries” (Wen et al., 2019, p.145). Additionally, being physically separated from parents and the stigma of being left behind were traumatic experiences for these children to deal with (Wen et al., 2019). Findings suggest left-behind children often suffered from depression (He et al., 2012) and inattention problems (Wen et al., 2019).

Measurement of Childhood Maltreatment

To better understanding the interrelation of multiple categories of child maltreatment and household dysfunctions, Felitti et al. (1998) conducted the Adverse Childhood Experiences (ACEs) study that has allowed researchers to further examine the physical, mental, and behavioral outcomes in adults with exposure to adverse experiences during their childhood. Felitti et al. (1998) developed the original ACEs questionnaire based on several existing literature including, but not limited to, the Conflict Tactics Scale (Straus et al., 1990) and the Wyatt study on childhood sexual abuse among African and White American females (Wyatt, 1985). Felitti's ACEs questionnaire assesses three categories of abuse, including psychological, physical, and sexual. It also examines five categories of household dysfunction, namely, mother treated violently, substance abuse in the household, mental illness in the household, parental separation or divorce, and incarceration of a household member. Lastly, it also investigates emotional and physical neglect.

Barnett et al. (1993) emphasized that the definition of child maltreatment is subjective to beliefs about childrearing practices in a given cultural context. Although the self-report format of the ACE questionnaire allows for data to be collected from a specific population (Anda et al., 2010), the questions in the original ACEs questionnaire do not address maltreatment at a group level, which children in collective cultures are more likely to experience. Acknowledging the significant impacts of child maltreatment on children's physical, mental, and behavioral health, the World Health Organization developed the Adverse Childhood Experiences International Questionnaire (ACE-IQ). The goal of this initiative was to provide countries around the globe with "a standardized international questionnaire that reflects the range of adversities prevalent across low-, middle-and high-income countries" (World Health Organization, 2011, p. 2). It intends to understand the patterns and prevalence of ACEs and to better aid the development of

policies and programs to reduce ACEs among children. Field-testing of ACE-IQ was implemented in China along with six other countries between 2009-2011. The ACE-IQ was translated and improved by back translation into Chinese written language and administered to 200-300 respondents aged 18 years and older. Among the Chinese sample, participants were drawn from a diverse background reflecting gender, age, socio-economic, and employment status (World Health Organization, 2011). Currently, the ACE-IQ is undergoing the reliability and validity test stage as it continues to be implemented as a part of a broader health survey in 6-8 countries, including China (Ho et al., 2019a; Nie, 2015; World Health Organization, 2011).

According to the World Health Organization (2011) and Katan (2019), besides demographic and marital status items, ACE-IQ has a total of 31 items and is organized into five main headings: relationship with parents and guardians; family environment; peer violence; witnessing community violence; exposure to war/collective violence. Thirteen categories of childhood adversity are assessed, and 31 items are cross distributed into these categories. An example from each of the 13 categories is presented as follow: 1) physical abuse, example question: Did a parent, guardian or other household member spank, slap, kick, punch or beat you up; 2) emotional abuse, example question: Did a parent, guardian or other household member yell, scream or swear at you, insult or humiliate you; 3) sexual abuse, example question: Did someone touch or fondle you in a sexual way when you did not want them to; 4) use of psychoactive substances by parents and guardians, example question: Did you live with a household member who was a problem drinker or alcoholic, or misused street or prescription drugs; 5) criminal behavior of parents and guardians, example question: Did you live with a household member who was ever sent to jail or prison; 6) chronic mental illness, depression, suicides of parents/guardians, example question: Did you live with a household member who was depressed, mentally ill or suicidal; 7) partner family/domestic violence, example question:

Did you see or hear a parent or household member in your home being yelled at, screamed at, sworn at, insulted or humiliated; 8) divorce, separation, death of parents, example question: Did your mother, father or guardian die; 9) emotional neglect, example question: Did your parents/guardians understand your problems and worries; 10) physical neglect/neglect of basic needs, example question: How often did your parents/guardians not give you enough food even when they could easily have done so; 11) bullying, mockery by peers, example question: How often were you bullied; 12) collective abuse, example question: Did you see or hear someone being beaten up in real life; 13) social abuse, example question: Was a family member or friend killed or beaten up by soldiers, police, militia, or gangs.

In a review of China's childhood maltreatment, Tao et al. (2006) indicated changes in family structure, such as parental divorce, can lead to increased maltreatment children. Liu et al. (2010) compared children's exposure to maltreatment in single-parent households, two-parent households, and households where both parents and grandparents share childrearing responsibilities and reported the rate of child neglect is the highest among single-parent families. In addition, Xu et al. (2019) found children were at increased risk for maltreatment in single-parent households and in stepfamilies. In light of abovementioned findings, it is reasonable to speculate that patterns of childhood maltreatment could differ among people who grew up as single-child or left-behind children, whose family structures either adhere to or derail from traditional two-parent family structure.

Patterns of Adversity in Chinese Adults From Hong Kong

Ho et al. (2019a) examined patterns of adverse childhood experiences among 433 young adults in Hong Kong. They first translated the ACE-IQ into Chinese and conducted a content validity study. Ho et al. further reported reliability of their Chinese translation through conducting a test-retest procedure. Ho et al. employed a latent variable analysis in the context of

structural equation modelling and identified three distinct groups among the adults in Hong Kong. The three groups were characterized by low numbers of ACEs, or high ACEs, or a pattern of domestic violence.

Current Study

Research has not compared childhood maltreatment experiences among Chinese adults who grew up as single-child or left-behind children. The current research seeks to understand how different family upbringings influence an individual's adverse experiences in childhood. Moreover, it aims to provide insight about the patterns of ACEs among Mainland Chinese adults through systematic replication of Ho et al.'s (2019a) study.

Hypothesis of the Present Study

Hypothesis: Adults who grew up as single children will have lower ACEs scores compared to respondents in the left-behind children group.

Chapter 2

Methods

Participants

One hundred and forty people (70 per group of Chinese adults who grew up as single-child and left-behind children) were recruited to participate in this study via a Mechanic Turk (i.e., SurveyMonkey, the Audience). The target population was Chinese adult nationals, currently living in the People's Republic of China. Each participant received monetary compensation upon completion of all items on the survey. The required sample size was estimated in an *a priori* power analysis using *GPower* (Faul et al., 2007; Faul et al., 2009; see Appendix A). This study was approved by the Human Subjects Research Committee (HSRC) at George Fox University and informed consent was obtained before participants filled out the survey.

The final sample included adults who described their childhood experience as left-behind ($n = 70$) or as single children ($n = 70$). Participants' ages ranged from 18 to 44 ($M = 30.19$, $SD = 5.61$). Among people who identified as left-behind children, there were 37 men and 33 women. In comparison, 31 men and 39 women identified as single children. The average age for the left-behind group was 30.83 ($SD = 5.49$) and 29.56 for the single-children group ($SD = 5.70$). The majority of the participants held an associate degree or higher (90.7%, $n = 127$), 7.1% graduated from high school ($n = 10$), and 2.1% were educated until the middle school level ($n = 3$). The majority of the participants were employed, with 78.6% employed at non-government workplaces ($n = 110$), 10% identified as self-employed ($n = 14$), 5% were students ($n = 7$), 4.3% working for the government ($n = 6$), and 2.1% were unemployed ($n = 3$). The majority of the participants resided in the metropolitan areas (90%, $n = 126$) and others in the rural areas (10%, $n = 14$). In terms of marital status, 75% were married ($n = 105$), 22.1% were single ($n = 31$), and people who self-identified as living as a couple and being separated or divorced accounted for 1.4% ($n = 2$).

Materials

Informed-Consent Forms

Informed consent written in Chinese was obtained before participants filled out the survey. Informed consent provided potential participants an opportunity to fully understand the purpose, format, and potential risk of the study before they consent to proceed the study (See Appendix B).

Demographic Questionnaire

Screening questions were used to determine if participants were single children raised by both parents or grew up as left-behind children in a rural area with one or both parents who

migrated to cities for work. All participants were asked to provide biopsychosocial information, including age, gender, education level, and cosmopolitan/rural residency (See Appendix C).

Adverse Childhood Experiences International Questionnaire (ACE-IQ)

ACE-IQ (World Health Organization, 2020b) is a self-report measure developed by the World Health Organization to aid researchers around the globe studying health risk behaviors and negative health outcomes associated with childhood adverse experiences. The measure consists of 31 items which assess childhood adverse experiences that occurred in the first 18 years of the participants' life. Items are organized into three domains: childhood maltreatment, family/household dysfunction, and violence outside the home. Under the 3 domains, 13 categories of childhood adversity are examined. The childhood maltreatment domain seeks to understand participants' exposure to emotional neglect, physical neglect, emotional abuse, and sexual abuse. In the family/household dysfunction domain, items examine individuals' early life experiences living with substance abuser, mental illnesses, incarcerated family members, parental death, separation, or divorce, and domestic violence. The violence outside the home domain includes bullying, witnessing community violence, and exposure to war/collective violence.

Questions in ACE-IQ are designed to have three types of responses. The first type is dichotomous, in which participants provide Yes/No answers. A typical question is: "Did you live with a household member who was depressed, mentally ill or suicidal." The second type is a 4-point Likert-type scale, where participants will choose from "never" to "many times". An example question is: "Were your parents/guardians too drunk or intoxicated by drugs to take care of you." The last type is 5-point Likert-type scale. Response options ranging from "never" to "always" are presented. A question from this group looks like this: "Did your parents/guardians understand your problems and worries."

To calculate the ACE-IQ score, World Health Organization (2020b) offers both binary and frequency versions. The current study adopted the frequency version, which better reflects the relationship between ACEs score and health outcome seen in the original ACE studies. Using the frequency ACE scoring method, 1 point was assigned to the corresponding category of adversity when a participant gave a certain answer. For example, when participant endorsed “many times” in either one of the items assessing for physical abuse, 1 point was assigned to the physical abuse category. Once scores from 13 categories were added, each participant received an ACE-IQ score ranged from 0 to 13.

Language Equivalence. Ho et al. (2019a) translated the ACE-IQ into both traditional and simplified Chinese and reported good semantic equivalence across the Chinese and English languages ($ICC = .90$). When taking a closer look at the simplified version, wording and phrasing differences were observed likely due to cultural and expression variation that exist between Hong Kong and Mainland China. To ensure Mainland Chinese participants’ accurate comprehension of the test items and minimize misunderstanding due to unconventional wording, a simplified Chinese translation of the ACE-IQ used in a Mainland Chinese study was obtained and used (Nie et al., 2015). However, no semantic equivalent for this version was reported in the Nie et al. study.

Reliability. Due to the nature of randomized online data collection via a Mechanical Turk, re-test by the same group of participants was deemed impossible to achieve. Therefore, no reliability data is available to compare with the study done by Ho et al. (2019a). However, according to Ho et al., their Chinese translation of the ACE-IQ demonstrated an overall good test-retest reliability ($ICC = .90$). Additionally, several studies using the Chinese version of 10-item ACE questionnaire developed by Felitti all have demonstrated good reliability (e.g,

Cronbach's alpha = .74; Fung et al., 2019). Taken together, it is suspected that the Chinese version of ACE-IQ used in this study could yield similar reliability results.

Procedure

This study was conducted in two phases. In phase one, the author obtained an existing simplified Chinese translation of ACE-IQ from scholars who have studied Chinese cultural groups using this measure. Reliability and validity of this translated version were examined before utilization. In phase two, participants' selection criteria were programed into SurveyMonkey's "the Audience". The researcher followed the prompts of "the Audience" to upload the consent form, screener question for single children, demographic questions, and the Chinese translation of ACE-IQ. Afterwards, monetary compensation was set up to provide incentives for participants. Lastly, the researcher repeated the same steps to collect data from left-behind children using a different screener question to determine participants' qualification.

Chapter 3

Results

ACEs in the Total Sample

The mean number of ACEs reported across the total sample was 2.13 ($SD = 2.36$). Although Chinese norms for the ACE-IQ are not available from the World Health Organization, descriptive data from several other Asian samples have been reported. For example, Ho et al. (2019a) studied a large sample ($n = 433$, $M = 1.83$, $SD = 1.73$) from Hong Kong which did not differ significantly from the mean of the current sample, $t(139) = 1.50$, $p = .14$, $d' = .16$. Table 1 displays the number of ACEs endorsed by participants in the Ho et al. (2019a) and current samples. About half of the participants in the current study reported at least one ACE (54.3%), and the remaining 45.7% reported two or more ACEs. These percentages did not differ from those reported for Ho et al.'s Hong Kong sample, in which slightly over half of the participants

scored at least one ACE (53.82%) and the others who experienced two or more ACEs (48.19%), $z = -.10, p = .92$. We also compared the current sample with results from a study conducted by Chang et al. (2019) of a larger Mainland Chinese sample ($n = 1346$). Chang et al. reported 66.2% ($n = 892$) of their participants experienced at least one form of ACE and only 5.93% reported four or more ACEs. A binomial test of differences between two proportions between the current sample and the Chang et al. sample shows a significantly larger proportion of the Chang et al.'s sample endorsed fewer than 2 ACEs, $z = 2.83, p = .005$. Finally, Ho et al. (2019b) examined ACEs reported by adults from four east Asian populations (Hong Kong, China, Taiwan, and Japan), $n = 1346, M = 20, SD = 1.55$. Compared to the current sample, Ho et al. (2019b) reported 67.90% of these participants were exposed to at least one form of ACE and the mean ACE score was 1.51 ($SD = 1.63$). The Ho et al. (2019b) sample also had significantly larger proportion of participants who endorsed fewer than 2 ACEs than did the current study sample, $z = 2.83, p = .005$.

Table 1

ACE Prevalence Rates by Score for the Ho et al (2019a) and Current Sample

Total ACE score	Ho et al.	Current sample	
	%	<i>f</i>	%
0	25.64	36	25.70
1	28.18	40	28.60
2	15.01	20	14.30
3	12.47	16	11.40
4	11.78	6	4.30
5	3.46	9	6.40
6	2.31	4	2.90
7 or more	1.15	3	6.30

Note. ACE = adverse childhood experience

Table 2 displays the ACE category prevalence rates for the Ho et al. (2019a) Hong Kong sample as well as the total current sample. Binomial tests of the differences between two proportions demonstrate the patterns of endorsements are different in the two samples. Specifically, using a Bonferroni correction and an alpha level of .004 for each comparison, 8 of the 13 categories are endorsed at significantly different rates in the two samples. In the current sample, emotional neglect is the most frequently reported ACE which accounts for 40.71% of the current participants ($n = 57$), followed by collective violence (31.43%, $n = 44$), parental death, separation, or divorce (30%, $n = 42$), and witnessing domestic violence (27.14%, $n = 38$). However, the Ho et al. Hong Kong participants most frequently experienced physical abuse (39.95%), witnessing domestic violence (30.48%), parental death, separation, or divorce (23.79%), and emotional abuse (20.32%).

Table 2

ACE Prevalence Rates by Category for the Total Sample, Left-Behind, and Single Children

ACEs Category	Ho et al.	Current	Comparison	
	<i>f</i>	<i>f</i>	<i>z</i>	<i>p</i>
Alcohol & Drugs	14	18	4.31	<.0002
Mental Illness	72	4	-10.51	<.0002
Separation & Divorce	103	42	1.47	.14
Treated Violently	132	38	-0.75	.45
Emotional Abuse	88	12	-3.19	.0014
Physical Abuse	173	9	-7.41	<.0002
Emotional Neglect	68	57	6.23	<.0002
Physical Neglect	19	17	3.29	.001
Sexual Abuse	57	25	1.38	.17
Bullying	14	8	1.33	.18
Incarcerated	13	10	2.17	.03

ACEs Category	Ho et al.	Current	Comparison	
	<i>f</i>	<i>f</i>	<i>z</i>	<i>p</i>
Community Violence	7	14	4.59	<.0002
Collective Violence	20	44	8.75	<.0002
<i>n</i>	433	140		

Note. ACE = adverse childhood experience

ACEs of Left-Behind and Single Children

There were no relationships between total ACEs scores and age ($r = -.11$), gender ($r_{pb} = -.09$), or childhood experience ($r_{pb} = -.10$). Table 3 displays the mean number of ACEs as a function of these demographic variables. When age is considered, based on a median split, the ACE-IQ scores for young ($M = 1.99$, $SD = 2.35$, $n = 81$) and older participants ($M = 2.32$, $SD = 2.38$, $n = 59$) did not differ significantly, $t(138) = -0.83$, $p = .41$, $d' = 0.14$. The ACE-IQ scores for men ($M = 1.91$, $SD = 2.44$, $n = 68$) and women ($M = 2.33$, $SD = 2.28$, $n = 72$) did not differ significantly, $t(138) = -1.06$, $p = .29$, $d' = 0.18$. The ACE-IQ scores for LBC ($M = 2.37$, $SD = 2.45$, $n = 70$) and SC ($M = 1.89$, $SD = 2.56$, $n = 70$) did not differ significantly, $t(138) = 1.22$, $p = .23$, $d' = .21$. Furthermore, the examination of all combinations of these demographic variables on total ACE scores using ANOVA yielded no significant main effect and no significant interactions (η^2 ranging from $<.001$ to $.10$, indicating no effect).

Table 3

ACEs Mean Scores Endorsed by Younger and Older, Men and Women, and Left Behind (LBC) and Single Child (SC) Childhood Experiences

Groups	<i>n</i>	<i>M</i>	<i>SD</i>	<i>t</i>	<i>p</i>	<i>d'</i>
Age						
Younger	81	1.99	2.35	-0.83	.41	0.14

Groups	<i>n</i>	<i>M</i>	<i>SD</i>	<i>t</i>	<i>p</i>	<i>d'</i>
Older	59	2.32	2.38			
Gender						
F	72	2.33	2.28	-1.06	.29	0.18
M	68	1.91	2.44			
Childhood						
LBC	70	2.37	2.45	1.22	.23	0.21
SC	70	1.89	2.56			

Note. ACE = adverse childhood experience

Table 4 shows the patterns of endorsement of the 13 ACE categories by LBC and SC. Binomial tests of the differences between two proportions demonstrate the patterns of endorsements is not different in the LBC and SC samples. Specifically, using a Bonferroni correction and an alpha level of .004, none of the 13 categories are endorsed at significantly different rates in the two samples.

Table 4

ACE Prevalence Rates by Category for the Left-Behind (LBC) and Single Children (SC)

ACEs Category	LBC	SC	<i>z</i>	<i>p</i>
Alcohol & Drugs	9	9	0	1.00
Mental Illness	2	2	0	1.00
Separation & Divorce	23	19	.74	.46
Treated Violently	19	19	0	1.00
Emotional Abuse	5	7	-.60	.54
Physical Abuse	3	6	-.69	.49
Emotional Neglect	31	26	.86	.39

Physical Neglect	11	6	1.29	.20
Sexual Abuse	14	11	.66	.51
Bullying	6	2	.68	.50
Incarcerated	7	3	.69	.49
Community Violence	8	6	.56	.57
Collective Violence	27	17	1.82	.07
<i>n</i>	70	70		

Note. ACE = adverse childhood experience

Two-Step Cluster Analysis Results

Because the overall ACE-IQ scores for Ho et al. (2019a) were similar to those for this sample, it seemed worthwhile to explore patterns of ACE-IQ responses to see whether there would be similarities with Ho et al.'s results here too. Ho et al. (2019a) used a latent class analysis within a Structural Equation Model framework to yield three patterns of responding. According to Ho et al. (2019a), the first class had low ACE endorsement and represented the largest group of participants (68.82%) who had low probability in experiencing any of the 13 forms of ACE. Ho et al.'s second class, named household violence (24.94%), revealed a pattern of high probability in exposure to physical and emotional abuse, as well as witnessing domestic violence. The third class, the multiple ACEs class (9.24%), reported in Ho et al. endorsed high probability of exposure to all types of ACEs.

To understand patterns of childhood adverse experiences in the current sample, a 2-step cluster analysis was employed. The 2-step cluster analysis creates natural groupings within data sets of dichotomous variables (e.g., responses to the 13 ACEs categories). Two-cluster, 3-cluster, and 4-cluster models were tested. Satisfactory models are described by both group cohesion and as well as separation. The 3-cluster and 4-cluster models met these criteria.

The cluster assignments for the 3-cluster and 4-cluster models were saved for each participant. The 3-cluster and 4-cluster models' assignments are highly correlated, contingency

coefficient = .80. The level of agreement is displayed in Table 5. Both the 3-cluster ($\chi^2(2) = 7.91$, $p = .02$) and 4-cluster models ($\chi^2(3) = 9.64$, $p = .02$) differentially assigned LBC and SC participants to a cluster, such that SC were over-represented in the Low ACEs cluster in both models and LBC were over-represented in the second-highest cluster (e.g., group 2 and group 3 in the 3-cluster and 4-cluster models, respectively). Finally, the difference between the 3-cluster model and the 4-cluster model is the 4-cluster model takes the low ACEs group from the 3-cluster model ($n = 75$) and splits it into two groups, a low ACEs cluster ($n = 49$) and group 2 ($n = 29$). The difference between the 4-cluster model low ACEs cluster and group 2 cluster is that all member of group 2 report the experience of emotional neglect whereas no members of the 4-cluster low ACEs group endorsed the emotional neglect experience. For the sake of parsimony, the 3-cluster model should be preferred.

Table 5

Correspondence of Group Assignments by the 3-Cluster and 4-Cluster Models

3-Cluster model assignment	4-Cluster model assignment				
	Low ACEs	Group 2	Group 3	High ACEs	Total
Low ACEs	46	28	1	0	75
Group 2	3	0	38	0	41
High ACEs	0	1	0	23	24
Total	49	29	39	23	140

Note. ACE = adverse childhood experience

A comparison of the prevalence of ACEs endorsements in groups 1, 2, and 3 in Ho et al. (2019a) and the current sample appears in Table 6. As in Table 2, a Binomial test of the differences between two proportions, using a Bonferroni correction and an alpha level of .004, was used to explore whether the patterns of endorsements are different in the two samples. Only the highest ACEs groups in the two samples (i.e., group 3) appear to be comparable in their

pattern of ACEs. Neither the lowest groups (i.e., group 1) nor the middle groups appear to be comparable. The Ho et al. data are shown in Figure 1 and a comparable figure for the LBC and SC from the current sample is shown in Figure 2.

Table 6

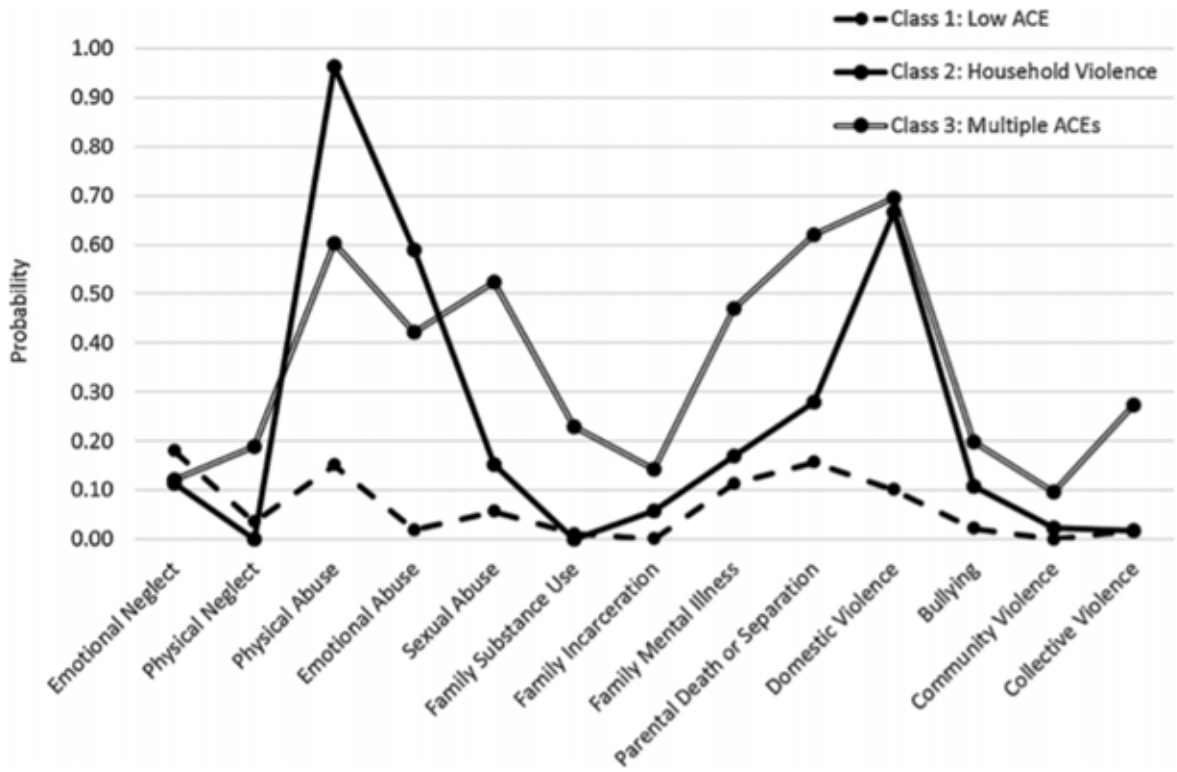
A Comparison of ACE Prevalence Rates by Category for Groups 1, 2, and 3 From the Ho et al. (2019a) and Current Samples

ACEs Category	Lo – Hong Kong	Lo – Current sample	<i>p</i>	DV – Hong Kong	CV – Current sample	<i>p</i>	Hi – Hong Kong	Hi – Current sample	<i>p</i>
Alcohol & Drugs	2	4	ns	0	0	ns	12	14	ns
Mental Illness	33	0	<.004	18	0	<.004	21	4	ns
Separation & Divorce	43	22	.004	34	4	<.004	26	16	ns
Treated Violently	24	5	ns	78	10	<.004	30	23	ns
Emotional Abuse	5	0	<.004	66	1	<.004	17	11	ns
Physical Abuse	45	0	<.004	107	0	<.004	21	9	ns
Emotional Neglect	50	28	<.004	12	15	ns	6	14	<.001
Physical Neglect	10	0	<.004	0	12	<.004	9	5	ns
Sexual Abuse	15	1	<.004	19	8	ns	23	16	ns
Bullying	5	0	<.004	13	2	<.004	9	6	ns
Incarcerated	0	4	.005	7	0	ns	6	6	ns
Community Violence	0	1	ns	3	2	ns.	4	11	<.003
Collective Violence	5	0	<.004	1	26	<.004	14	18	<.002
<i>n</i>	285	75		108	41		40	24	

Note. ACE = adverse childhood experience; DV = domestic violence; CV = collective violence

Figure 1

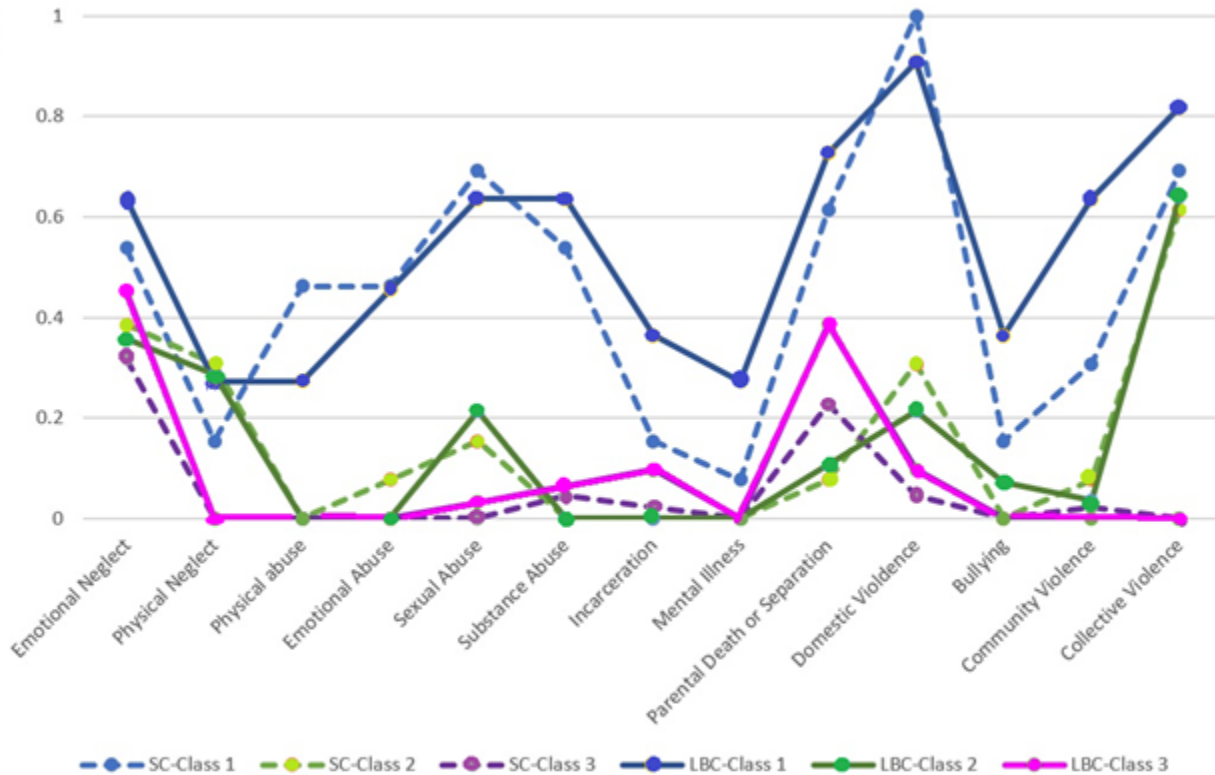
Item Response Probabilities for Two Cluster Analyses Solutions



Note. The three-class cluster solution. ACE = adverse childhood experience

Figure 2

Item-Response Probabilities for the 13 ACEs Across Three Clusters for LBC and SC From the Current Sample



Note. The three-cluster solution for left-behind children (LBC) and single children (SC).

Chapter 4

Discussion

The results of this study do not support the hypothesis that people who grew up as left-behind children experience more adverse childhood experiences than those who grew up as single children. This finding was somewhat surprising as one may suspect people who were raised apart from parents are more vulnerable to maltreatment than single children who tend to receive care from not only parents but also two sets of grandparents (Feng et al., 2014).

Nevertheless, the results may be understood in light of a number of nuanced factors. First, Chinese families place high importance in caring for their offspring and invest generously in their children’s health and education. This is, in part, driven by the belief that a family’s honor and the care of elderly parents depend on the achievement of children (Xu & Xia, 2014).

Children raised by either grandparents or by their own parents are expected to fulfil filial piety

and bring honor, prosperity, and security to their elders (Deutsch, 2006; Xu & Xia, 2014). Therefore, whether people were left-behind or single children, they may have received similar treatment from their caretakers and similar probability of being exposed to various types of ACEs. Secondly, most Chinese women keep their full-time jobs beyond motherhood, hence they are in need of help for childcare (Xu & Xia, 2014). Combined with a lack of quality and affordable childcare services, a vast number of children including single children are raised by their grandparents (Xu & Xia, 2014). Often, grandparents continue to be the main caretakers for these single children to help offset the childcare burden of their two full-time working parents (Xu & Xia, 2014). When single children are raised at their grandparents' home, which sometimes can be at a different city or province, their experiences may by and large resemble those of left-behind status. Thirdly, the average age and age ranges are similar between the left-behind and single-children groups. This indicates participants from both groups grew up in a similar macro environment in which China passed and implemented child protection laws and regulations (Zhao et al., 2017). This may account for why the two groups of participants were similar in their ACE exposure. Furthermore, the higher education and urban residency status reported by the majority of both childhood experience groups may act as protective factors and account for the similarities of ACE exposure among the two groups.

The findings of this study were compared to larger samples collected in Hong Kong (Ho et al., 2019a), Mainland China (Chang et al., 2019), and East Asia (Ho et al., 2019b). Compared to the Hong Kong Sample (Ho et al., 2019a), results yielded from this study were nearly identical, in both the percentage of participants experienced at least one form of ACE and those endorsed two or more ACEs. The main difference between the current study and the Hong Kong sample lies in the most frequently reported forms of ACEs. Sample collected in Hong Kong revealed the top frequently ACEs were physical abuse and emotional abuse. Whereas this current

Mainland Chinese sample noted they were more likely to experience emotional neglect and witnessing collective violence. Both samples frequently experienced parental death, separation, or divorce, as well as witnessing domestic violence. In light of the significant comparability between the Mainland and Hong Kong samples, this may illuminate the shared culture, history, and values between the two regions. Differences in most reported forms of ACE may be attributed to regional cultural variances, different development trajectory caused by colonialism that took place in Hong Kong, and policy differences brought by the one country, two systems policy.

Contrary to Chang et al.'s (2019) Mainland sample, the current results indicated a higher percentage of participants exposed to at least one form of ACEs as well as those who endorsed four or more ACEs. A number of factors are possible explanations for these observed differences. First, women accounted about 70% of Chang et al.'s total sample compared to 50% in our sample. In addition, Chang et al. recruited nearly equal numbers of participants from rural and urban respectively whereas 90% of the current sample resided in urban areas. Lastly, only 12% of Chang et al.'s participants identified as single children whereas half of the current sample claimed to be single children. Taken together, it is suspected that gender differences and demographic variances may account for the discrepancy found in these two studies.

When examined against Ho et al.'s (2019b) East Asian sample, our sample endorsed a higher percentage of people experiencing any forms of ACEs and lower average score for ACEs. Regional cultural, sociopolitical, and value difference may explain the differences in the findings reported.

In addition, this study revealed three distinct ACEs class patterns among the Mainland Chinese. The first class, with the Lowest ACEs precedence, is named parental discord. This cluster is characterized by a pattern in which people who experience parental death, separation,

or divorce, also report high likelihood of experiencing emotional neglect. This pattern likely reflects the loneliness and emotional invisibility felt by the generation whose parents were preoccupied with work as China underwent a large-scale economic transformation requiring intense labor and dedicated workforce. Chinese culture that values diligence and dedication to work may have further provided grounds for parents to focus on their work and consequently pay little attention to children's emotional wellbeing as long as their visible needs are met (e.g., physical and educational needs). Moreover, Ma et al. (2018) found the divorce rate in China has increased significantly since the 1980s. Among divorced and single parent households, children are at an increased risk for child neglect (Liu et al., 2010).

The second class in our study revealed a pattern of environmental discord in which people who frequently witnessed collective violence also endorsed high probability in experiencing emotional and physical neglect. This pattern may reflect the societal unrest and changes in family constellation driven by drastic transformations in China in the past 40 years. When families are distressed by the social and political changes, it affords them little energy and capacity to attend to children's physical and emotional needs, while also exposing children to higher level of collective violence.

The last class in our study accounted for the smallest percentage of the participants and revealed a pattern of elevated ACES across multiple categories. This is similar to a class pattern reported in Ho et al.'s Hong Kong and East Asian samples (2019a, 2019b). In sum, unlike Ho et al.'s findings (2019a, 2019b) that revealed a pattern of high abuse toward children (physical and emotional) and other family members (domestic violence), the ACEs patterns from this Mainland Chinese sample shed light on the unique history that Mainland China had gone through in the past four decades and the impacts on people's childhood adversities.

Further comparison between this current sample and Ho et al.'s (2019a) revealed significant differences exist in both the lowest ACEs groups and middle groups. Among the two lowest ACEs groups, this current sample reported significantly less in the categories of mental illness, physical, emotional and sexual abuse, physical and emotional neglect, bullying, and witnessing collective violence. For the two middle groups from both samples, the current sample endorsed significantly fewer ACEs in mental illness, experiencing parental death or separation, witnessing household member treated violently, emotional and physical abuse, physical neglect, bullying, and witnessing collective violence. It is suspected that the current sample collected from a larger region (the Mainland China versus the city of Hong Kong) with a smaller sample size ($n = 140$ versus $n = 433$) may have accounted for the difference. Mental health literacy differences in the two regions may explain the lower endorsement in many of the ACE categories. The single-child policy and recent implementation of child protection laws in Mainland China may also acted as protective factors and shielded children from exposure to ACEs in the current Mainland sample.

Implications

Single children are often labeled as “little emperors,” as stereotypically they are showered with attention and received care and resources from six adults (parents and two sets of grandparents). Contrary to this view, my findings support that single children are just as vulnerable as the left-behind children in experiencing childhood adversities. The left-behind children have increasingly attracted attention from society and researchers alike as their disadvantages in life are somewhat more visible. Nevertheless, my findings highlight that child maltreatment among single children should not be ignored or minimized. Policymakers and workplace leaders alike should provide resources and incentives for parents to spend quality time with their children and attend to their emotional and physical and educational needs.

Bronfenbrenner (1979) pointed out a child's development is impacted by various contexts and the complex interactions of those contexts, such as microsystem (e.g., family, school, peers), exosystem (e.g., extended family, neighbors), and macrosystem (attitudes and ideologies of the culture). My findings support that it is important to protect children from maltreatment in their immediate microsystem and exosystem in which they may be exposed to community and collective violence.

As a response to Ho et al.'s (2019a, p. 187) call for "further investigations on cultural specific patterns of ACEs", this study examined ACE differences among the LBC and SC from China and patterns of ACEs among these populations. This study sheds light on how historical, socio-political, and regional cultural differences may have impacted adverse childhood experiences among similar ethnic and racial groups.

Limitations

There are a number of limitations to the current study. The first limitation is the nature of self-report in the measure and screening question. Participants were asked if they consider themselves as single children or left-behind children before the age of 18, but no other mechanism was in place to insure honest reporting. Similarly, ACE-IQ is a self-report questionnaire without embedded validity measures. Therefore, it is difficult to discern if the answers truly represent the participants' childhood experiences. It is important to note that the responses were collected via a web-based Mechanical Turk without opportunities to address questions participants may have had about certain test items. Hence, the answers collected could be subject to misunderstanding of questions asked or response bias. Another limitation is that little is known about the geographic location of the participants besides their residing country. Given vast regional cultural differences exist in China, it is impossible to know to what extent the results can be generalized without the knowledge of participants' general locations. Lastly,

despite the ACE-IQ is intended to be used globally, evidence to support the effectiveness of the ACE-IQ's ability to capture the Chinese culture is still limited.

Future Research

This current study looked at adverse childhood experiences from a small sample of adults who grew up as single children and left-behind children in Mainland China. Future research with a larger and more representative sample is needed to further our knowledge about ACEs among Mainland Chinese, especially the single children and left-behind children, populations that bear the impacts of China's unique economic and sociopolitical transformations. Additionally, future research is needed to examine the semantic equivalence, validity, and reliability of the Chinese translation of ACE-IQ used in this study, as no official Chinese translation is available for researchers and clinicians alike. Furthermore, this study responded to the World Health Organization's initiatives in the development of an international measure for adverse childhood experiences. The current study highlighted the importance of examining ACEs not only in a given culture but also specific populations within this culture. Researchers and clinicians alike should consider that ACEs patterns likely differ in various geographical locations. Hence, further study is recommended to investigate the impact that culture and historical events have on people's childhood adverse experiences.

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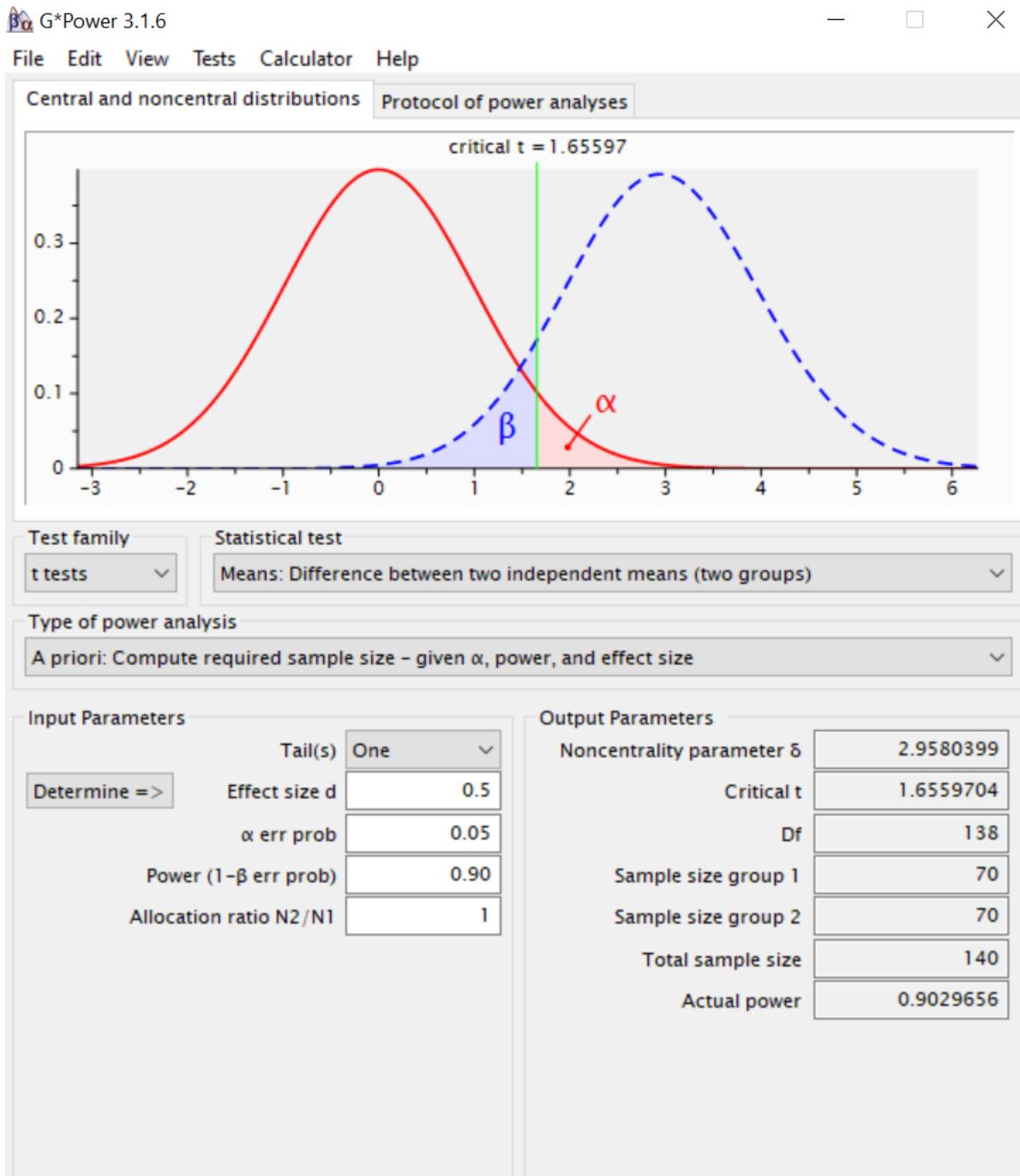
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Appendix A

Sample Size Calculations



Appendix B

Informed Consents

研究目标: 本次研究的目的在于了解国人在童年时期遇到过的一些经历。

Study purpose: the primary purpose of this study is to understand some common types of childhood experiences among the mainland Chinese populations.

研究人员: 本次研究的发起人及主要研究人员为乔治福克斯大学临床心理系博士生曲苑, 及其指导教授 Dr. Gathercoal.

Investigators: the study is initiated and led by Yuan Qu, a clinical psychology doctoral student at George Fox university and is under the direction of Dr. Gathercoal.

研究程序: 调查参与者将填写一份由 29 个问题组成的问卷。问卷开始时将要求参与者真实填写以下的信息: 年龄、性别、教育程度、是否现居住在城市, 以及成长背景类型。完成问卷预计需要 **15-20 分钟**。如同意参与填写问卷, 参与者需要在下方点击**同意**按钮进入问卷, 填写完整后, 点击**提交**按钮。

Study Procedures: participants will be asked to fill out a 29-question survey. At the beginning of the survey, participants will also be asked to fill out the following information: age, gender, educational level, urban or rural residency, and up-bring type. It will take approximately 15-20 minutes to complete the survey. By clicking “consent”, participant gives consent to enter this study and will be taken to another page where they can see the questions contained in this survey. Upon completion, participants are asked to click “submit” in order to submit survey data.

保密措施: 为确保数据的保密性, 问卷内容**不涉及采集**参与者姓名, 家庭住址, 联系方式等个人私密信息。并且, 在问卷填写完整后, 数据将被妥善保管, 并且只有上述研究人员可以获取数据。本次研究的结果将以年龄组的形式进行分析汇报。个体的数据将不被单独分析或汇报。

Confidentiality: to ensure confidentiality of all survey data, questions listed in the survey do not ask for identifying information such as: names, address, or contact methods. Upon completion of the survey, data will be stored securely in password-protected storage and with access only by the investigators listed above. The results of the study will only be reported in aggregate and individual results will never be examined or reported.

研究风险: 本次研究未有可遇见的参与风险, 但是不排除参与者在填写问卷时可能因问卷的提问而产生心理的不适感。

Risks: There are no known risks of the study procedures. However, it is not impossible that participants might feel psychological discomfort while filling out the survey due to the questions listed.

研究结果: 您可以在本次研究项目完稿后, 提出申请阅读该研究项目的英文成稿。如有需要, 请联系曲苑: lqu18@georgefox.edu。

Study results: Upon completion of the study, participants can request access to the study results in its English manuscript. Should you be interested in the study results, please contact Yuan Qu at lqu18@georgefox.edu.

我的年龄为 18 岁及以上。我已阅读并明白上述信息。我自愿参与并填写本次关于国人童年期负面经历的研究调查问卷。我明白，在填写问卷的任何时刻，如因任何原因无法完成问卷，我有自由随时退出参与本次调查问卷。

I am 18 years old or older, I have read and understood the information above. I understand my

participation is voluntary and hereof give my consent to participant in this study of

understanding childhood experiences among the mainland Chinese populations. I understand, if

at any moment during the survey that I wish to stop, I can withdraw from this study at any

moment.

Appendix C

Demographic Questionnaires

个人基本情况 Demographic Questionnaire

1) 性别：男/女

2) Gender: Male/Female

2) 年龄：

2) Age:

3) 文化程度：1)未接受正式教育，2)小学，3)初中，4)高中/中专，5)本科/大专，6)硕士及以上

3) Highest Level of Education Attended: 1) No Formal Education, 2) Elementary School, 3) Middle School, 4) High school, 5) Bachelor's/Associate's degree, 6) Master's Degree and Above

4) 居住地：城市/农村

4) Residency: City/ Rural

5) 成长背景类型：1) 独生子女，2) 留守儿童

5) Up-bring type: 1) Single-child, 2) Left-behind child