The Impact on Mental Health of Losing an Only Child and the Influence of Social Support and Resilience

Xiancai Cao¹, Chongming Yang², and Dahua Wang¹

Abstract
The number of parents who have lost their only child (PLOCs) has increased annually with the implementation of the birth control policy in mainland China. This study aimed to investigate the mental health status of PLOCs and the influence of social support and resilience. Study 1 recruited 100 PLOCs and 88 nonbereaved parents, and compared differences in depression, anxiety, and loneliness. Study 2 investigated the influence of social support and resilience on the mental health of PLOCs via a mediating model. Results indicate that PLOCs reported more anxiety and depression symptoms than nonbereaved counterparts. Perceived close family support, objective support, and resilience negatively predicted anxiety and depression. In addition, perceived close family support was found to influence mental health via resilience. The current findings reveal that losing an only child has long-term negative impacts on the mental health of PLOCs. However, perceived close family support and objective support can protect their mental health either directly or indirectly via resilience.

Keywords
only child, Shiduer, mental health, social support, resilience

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There has been emerged in China a remarkable number of families who have lost their only child, partially because of the one-child policy enacted since the 1970s. The official definition of such families includes the following features: (a) the mother of the lost child is over the age of 49 years, (b) the couple have had only one biological child who has died, and (c) the couple have no ability or willingness to attempt another birth. Parents who have lost their only child (PLOCs) are known as *Shiduer* in China (Zheng, Lawson, & Head, 2015). It is estimated from national census data (collected every 10 years) that the number of PLOCs in China is approximately 821,000, and this number is projected to reach 1.423 million in 2030 (Zhou & Mi, 2013). Although research has revealed strong evidence that losing a child is a tremendous threat to the mental health of parents (Harper, O’Connor, & O’Carroll, 2014; Nyberg, Hed Myrberg, Omerov, Steineck, & Nyberg, 2016), limited empirical studies have investigated the mental health of PLOCs in China, or possible protective factors.

Previous research has shown that bereaved parents exhibit more symptoms of depression, anxiety, loneliness, grief, and posttraumatic stress disorder than did their nonbereaved counterparts (Harper et al., 2014; Kreicbergs, Valdimarsdóttir, Onelov, Henter, & Steineck, 2004; Nyberg et al., 2016). The situation could be even worse in Chinese culture if the child that has died is an only child. PLOCs in China can be conceptualized as reverse orphans. They typically suffer not only from the distress caused by the loss but also from the pressure imposed by the social and cultural surroundings. First, they tend to feel low esteem, as they are thought to be unfilial and shameful to their ancestors. The core value of Chinese tradition is filial piety, which is derived from the teachings of Confucius. This tradition requires children to appreciate and repay their parents’ sacrifice, satisfy their parents’ psychological or relational needs, respect their ancestors, and continue their family name (Hwang, 1999). To illustrate this point, a pertinent quote widely attributed to Confucius is “there are three unfilial acts, bearing no descendant is by far the most unforgivable.” Therefore, the death of an only child brings about a stigma or even a “curse” to the family name, because PLOCs are unable to pass down the family name through their biological offspring. Thus, it is understandable that losing an only child could be detrimental to the self-esteem of the parents (Zheng & Lawson, 2015). Second, as Chinese families are highly child centered and children are considered to be the origins of happiness, success, and the emotional bond of the entire family (Zimmer & Kwong, 2003), losing an only child can threaten parents’ overall well-being. Specifically, it has been shown that PLOCs experience more marital disruption than do their nonbereaved counterparts (Gear, 2014). Finally, as children usually act as the primary caregivers for older adults in China, losing an only child means that the time, money, and love that parents have invested and assumed to be repaid are gone, which may
cause increased financial or social burden as they age (Xiao & Yang, 2014). In summary, it is quite common in Chinese culture that PLOCs are required to cope with double stressors (i.e., both psychological trauma and culture pressure), a finding which has been indicated by a previous qualitative study (Zheng & Lawson, 2015).

Unfortunately, research focusing on the mental health of Chinese PLOCs is disproportionately lacking, given the scope and severity of the issue. Some qualitative research using case studies have revealed that PLOCs tend to present with serious mental problems, among which depression, loneliness, and anxiety were found to be the major symptoms (Zheng & Lawson, 2015). Several quantitative studies have also examined the influence of losing an only child on parental mental health (Liu et al., 2015; Pan, Liu, Li, & Kwok, 2016; Zheng et al., 2015). For example, Liu et al. (2015) found that PLOCs might adopt ineffective coping strategies and report higher depression than nonbereaved parents. In contrast, limited studies have explored the protective mental health factors of PLOCs (see Pan et al., 2016, for an example), which might be relevant to the developmental interventions.

To improve the generalizability of previous research, more studies need to be performed with a larger and better-matched sample. Furthermore, studies relevant to protective factors should also be completed for the purpose of improving the care provided to bereaved individuals by health professionals. Therefore, in this study, we recruited two groups of parents (a group of PLOCs and a control group of parents whose children were still alive) to compare their self-rated depression, loneliness, and anxiety.

In addition to learning the status of bereaved individuals, it is also valuable to identify protective factors in this population (Schut, Stroebe, Van den Bout, & Terheggen, 2001). According to the integrated model of bereavement (Stroebe, Folkman, Hansson, & Schut, 2006), factors which can influence bereavement outcomes can be divided into interpersonal (i.e., those that originate within social context and are external to the bereaved individuals) and intrapersonal (i.e., the characteristics intrinsic to the bereaved individuals). In this study, social support and resilience were selected as the interpersonal and intrapersonal protective factors, respectively.

Previous research indicates that social support can help bereaved individuals recover from traumatic experiences (Kreicbergs, Lannen, Onelov, & Wolfe, 2007). Social support can be divided into two types: that which is actually received (i.e., the quantitative and objective aspects of social support), and that which is perceived (i.e., the evaluation and subjective feelings of a particular social support; Haber, Cohen, Lucas, & Baltes, 2007). Various research has indicated that, following traumatic events, social support can act as a protective factor against mental and physical health issues, and that individuals who have
higher social support exhibit better mental health than do those with lower social support (Cohen & Wills, 1985). In addition, some research has found that a lack of social support was a risk factor for negative mental health outcomes in bereaved parents (Van Der Houwen et al., 2010), and that social support can help bereaved parents work through grief (Kreicbergs et al., 2007). Further, a recent study also indicated that social support can help PLOCs overcome grief and assist in their posttraumatic growth (Pan et al., 2016).

Resilience is a widely recognized intrapersonal factor underlying an individual’s recovery from stressful experiences. Resilience can be conceptualized not only as a personal trait or ability that helps individuals maintain relatively stable, healthy psychological or physical functions during disruptive events (Block & Kremen, 1996), but also as a dynamic process, which encompasses positive adaptation within the context of adversity (Luthar, Cicchetti, & Becker, 2000). The current study considered resilience as a personal trait, measured as the participants’ general perception about themselves. It has been conceptualized that resilience involves two capacities: The first is to cope with, overcome, and adapt to traumatic experience; and the second is to rebuild oneself, grow, and move forward (Bonanno, 2004). Specifically, it includes many positive traits like trust, control, acceptance of change, and optimism (Connor & Davidson, 2003). Many studies have also found that trait resilience was negatively correlated with poor mental health symptoms, such as depression (Beutel, Glaesmer, Wiltink, Marian, & Brähler, 2010; Hasui et al., 2009) and anxiety (Beutel et al., 2010). The importance of resilience in recovery from loss or grief has also been demonstrated among bereaved parents, spouses, and caregivers of chronically ill persons. In addition, individuals who show higher resilience report a more positive outlook and better adaption than those demonstrating lower levels (Bonanno, Moskowitz, Papa, & Folkman, 2005).

Research has also demonstrated that social support and resilience may work together in the recovery process. For instance, social support is particularly important in maintaining good physical and psychological health in the presence of environmental risks, which could help individuals to develop resilience (Luthar et al., 2000; Ozbay, Fitterling, Charney, & Southwick, 2008). Pinkerton and Dolan (2007) proposed that family support and social capital could link coping by resilience. Some research within the organizational context has also found that psychological or emotional support could positively predict resilience, promote work performance, and improve occupational psychological health (Bernabe & Botia, 2016). Moreover, a longitudinal study found that resilience mediates the relationships between social support and mental health among people with physical illness (Koelmel, Hughes, Alschuler, & Ehde, 2016). Thus, social support and resilience were selected as the interpersonal and intrapersonal protective factors, respectively, in this study, and it is reasonable to hypothesize that resilience plays a mediating role in the connection between social support and mental health among PLOCs.
Hypotheses. From the perspective of positive psychology (Gable & Haidt, 2005), this study aimed to investigate the mental health status of PLOCs and explored the influence of two important protective factors (i.e., social support and resilience). This report includes two studies. In Study 1, two groups of older adults were recruited (a loss group and a control group) from the same community so that the two samples would be more matched in a social and community context, then compared their self-rated depression, loneliness, and anxiety. We hypothesized that PLOCs would exhibit worse mental health, with more anxiety, depression, and loneliness than the control group (H1). In Study 2, we recruited only PLOCs and selected the outcome variables according to Study 1. Using a larger sample, we aimed to investigate the influences of social support and resilience on the outcomes of PLOCs with a mediating model. We hypothesized that (a) PLOCs with more social support and higher resilience would report better mental health ratings (H2) and (b) resilience would play a mediating role in the link between social support and mental health among PLOCs (H3).

Study 1: Mental Health Status of Parents Who Lost Their Only Child

Method

Participants. Two groups of participants were recruited from communities of a district in Beijing. PLOCs were enrolled by the community committee, a local government office providing neighborhood services and had access to all the PLOCs in local community. The committee contacted the PLOCs who did not reject social contact in the community, explained the aim of this study, and asked whether they would be willing to participate in the investigation. All the participants provided written informed consent before the investigation. The loss group consisted of 100 PLOCs. The screening criteria were adopted according to the government’s official definition of PLOCs: (a) the age of a female participant or the spouse of a male participant was over 49 (which is thought to be the age limit for women’s fertility), (b) the participant had only one biological child, and (c) the child had died and the participant currently had no living child. The control group included 88 adults who were recruited from the same communities with the help of the community committee. Screening criteria for the control group included: (a) the age of a female participant or the spouse of a male participant was over 49, (b) the participant had at least one biological child in the current marriage, and (c) the participants had no deceased or disabled children. There were no significant differences in demographic characteristics between the two groups. Supplementary Table 1 presents the distribution of sociodemographic variables of the two groups, and descriptive statistics of variables involved in the child’s death.
Measures

Anxiety. The 20-item Geriatric Anxiety Inventory (GAI; Yan, Xin, Wang, & Tang, 2014) was adopted to measure participants’ anxiety in this study. Participants responded with a 1 (yes) to indicate the presence of symptoms and 0 (no) for the absence of symptoms. The number of symptoms was summed to create a total anxiety score ranging from 0 to 20, with higher score indicating more anxiety symptoms. A confirmatory factor analysis (CFA) in the current study indicated that a one-factor model fit the data well (χ² = 241.28, df = 170, p < .05, root mean square error of approximation [RMSEA] = .05, comparative fit index [CFI] = .99, tucker lewis index [TLI] = .99). Cronbach’s α coefficients of this inventory were .96 for the loss group and .85 for the control group.

Depression. The 15-item Geriatric Depression Scale (GDS; Tang, 2013) was utilized in this study. Each item requires participants to respond with a 0 (no) or 1 (yes) to indicate the presence or absence of symptoms. The number of symptoms was summed to form a total depression score ranging from 0 to 15, with higher scores indicating more depression symptoms. A CFA indicated that a one-factor model fit the data well (χ² = 145.971, df = 89, p < .05, RMSEA = .06, CFI = .97, TLI = .96). Cronbach’s α coefficients of this inventory were .88 for the loss group and .94 for the control group.

Loneliness. The 20-item University of California, Los Angeles, Loneliness Scale (Wang, Wang, & Ma, 1999) was used in this study to detect variations in loneliness. Participants needed to indicate how often they experienced 20 specific feelings, from 1 (never) to 4 (always). Higher scores indicated more lonely experiences. As a one-factor model did not fit the present sample well, an exploratory factor analysis was conducted and revealed two dimensions, namely negative experiences of social relationships (Loneliness 1) and positive experiences of social relationships (Loneliness 2). The CFA indicated the two-factor model fit the data well (χ² = 315.17, df = 167, p < .05, RMSEA = .07, CFI = .97, TLI = .97). Cronbach’s α coefficients of each subscale were .91 and .87 for the loss group, and .92 and .85 for the contrast group.

Statistical analyses. Multiple Indicators Multiple Cause (MIMIC) modeling was utilized to assess the effect of covariates on the factor structure. MIMIC modeling is a subtype of structural equation modeling that contains two parts: (a) a measurement component relating indicators to the latent variables, which may (b) then be regressed on the covariates. The MIMIC model has the advantage of allowing the simultaneous detection of both the effects of indicators and the effects of categorical or continuous variables on latent variables (Muthén, 1989). The statistical process included several steps. First, a CFA was performed to establish a valid model of each latent variable.
Then, MIMIC modeling was employed to test the effects of covariates on the latent and outcome variables. Two MIMIC models were examined in this study. The first was applied to the whole sample with five covariates, including age, gender (0 = female; 1 = male), education, monthly income, and loss of an only child (0 = no; 1 = yes). The primary purpose of this MIMIC model was to examine group differences in mental health. The second was applied only to the loss group with seven covariates, including age, gender, education, monthly income, years since child’s death, parent’s age at child’s death, child’s age at death, and the cause of death (dummy variables for accident, disease, and suicide). The purpose of this MIMIC model was to examine the mental health prediction capabilities of covariates among individuals in the loss group. Analyses were performed using Mplus Version 7.

Results

Descriptive Statistics

Descriptive statistics for the mental health measures are shown in Table 1.

Effects of Losing an Only Child on Anxiety, Depression, and Loneliness

The first MIMIC model was conducted among all participants to test the effects of losing an only child on mental health outcomes. The model indicated a good fit ($\chi^2 = 2020.53$, $df = 1679$, $p < .01$, RMSEA = .03, CFI = .97, and TLI = .97). As shown in Table 2, results indicated that the loss of a child significantly predicted anxiety and depression, implying that PLOCs reported higher anxiety and depression than their counterparts.

Effects of Child’s Death Variables on Anxiety, Depression, and Loneliness

A second MIMIC model was conducted among parents in the loss group to test the effect of variables related to child’s death on mental health outcomes.

| Table 1. Means and Standard Deviations of Mental Health Variables by Group. |
|-------------------------|---------|---------|----------------|
| Group                   | Anxiety | Depression | Loneliness 1  |
|                         |        |           |                |
| Loss group              | 5.97 (6.54) | 5.13 (4.25) | 2.09 (.64) |
| Control group           | 2.34 (4.41) | 3.38 (3.47) | 1.88 (.68) |
|                         |          |           | 1.95 (.58)    |
|                         |          |           | 1.93 (.67)    |
Again, CFAs were first applied to test the structures of each measurement. CFAs within the anxiety and depression scale verified the hypothesized factor structure with some suggested modifications. The items all loaded onto their factors, and the model fit the data well (anxiety scale: $\chi^2 = 211.76$, $df = 170$, $p < .05$, RMSEA = .05, CFI = .99, TLI = .99; depression scale: $\chi^2 = 128.32$, $df = 88$, $p < .05$, RMSEA = .07, CFI = .97, TLI = .96). The loneliness scale fit a two-factor model well ($\chi^2 = 258.755$, $df = 165$, $p < .05$, RMSEA = .08, CFI = .97, TLI = .97).

The model fit the data well, $\chi^2 = 2162.33$, $df = 1882$, $p < .01$, RMSEA = .04 CFI = .96, and TLI = .96. As shown in Table 3, cause of death exerted a significant effect on anxiety and depression. Specifically, compared with those

### Table 2. Results of MIMIC Model Among the Entire Sample.

<table>
<thead>
<tr>
<th>Predictors</th>
<th>Anxiety</th>
<th>Depression</th>
<th>Loneliness 1</th>
<th>Loneliness 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td>-.11</td>
<td>-.13</td>
<td>-.07</td>
<td>-.09</td>
</tr>
<tr>
<td>Age</td>
<td>-.04</td>
<td>-.06</td>
<td>-.29**</td>
<td>-.14</td>
</tr>
<tr>
<td>Education</td>
<td>-.13</td>
<td>-.12</td>
<td>.04</td>
<td>-.01</td>
</tr>
<tr>
<td>Income</td>
<td>-.01</td>
<td>-.11</td>
<td>&lt;.01</td>
<td>-.07</td>
</tr>
<tr>
<td>Losing an only child</td>
<td>.36**</td>
<td>.24**</td>
<td>.11</td>
<td>.06</td>
</tr>
</tbody>
</table>

***p < .001. **p < .01.

### Table 3. Results of MIMIC Model of the Loss Group.

<table>
<thead>
<tr>
<th>Predictors</th>
<th>Anxiety</th>
<th>Depression</th>
<th>Loneliness 1</th>
<th>Loneliness 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td>-.07</td>
<td>-.14</td>
<td>-.18</td>
<td>-.22</td>
</tr>
<tr>
<td>Age</td>
<td>.03</td>
<td>&lt;.01</td>
<td>-.30</td>
<td>-.17</td>
</tr>
<tr>
<td>Education</td>
<td>-.06</td>
<td>-.11</td>
<td>-.17</td>
<td>.06</td>
</tr>
<tr>
<td>Income</td>
<td>-.02</td>
<td>-.09</td>
<td>.11</td>
<td>-.03</td>
</tr>
<tr>
<td>Years since child's death</td>
<td>.07</td>
<td>-.17</td>
<td>.20</td>
<td>-.03</td>
</tr>
<tr>
<td>Parent's age at child's death</td>
<td>-.18</td>
<td>-.30</td>
<td>.72</td>
<td>.46</td>
</tr>
<tr>
<td>Child's age at death</td>
<td>.28</td>
<td>.20</td>
<td>-.32</td>
<td>-.47</td>
</tr>
<tr>
<td>Cause of death</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Disease vs. Accident</td>
<td>-.22**</td>
<td>-.28**</td>
<td>-.16</td>
<td>-.26</td>
</tr>
<tr>
<td>Suicide vs. Accident</td>
<td>-.85</td>
<td>-.18</td>
<td>-.02</td>
<td>-.15</td>
</tr>
</tbody>
</table>

**p < .01.
whose only child died of accident, parents whose child died of disease reported fewer anxiety and depression symptoms. Other variables associated with child’s death did not predict the mental health of the participants.

**Discussion**

This study found that PLOCs experienced more anxiety and depression symptoms than parents whose children were still alive after controlling for demographic variables, which mostly supports the first hypothesis. In addition, these results are consistent with the findings of previous qualitative studies. Specifically, these studies have found that PLOCs can exhibit serious anxiety and depression symptoms (Zheng & Lawson, 2015), bereaved parents demonstrated higher anxiety and depression risks than nonbereaved parents (Kreicbergs et al., 2004), and bereaved mothers have higher levels of depression than widows or bereaved daughters (Leahy, 1995).

When considering the poor mental health status of PLOCs and the average years since child’s death ($M = 11.78$, $SD = 7.57$) of the current sample, it is striking to find that the mental health status of the PLOCs remained poor despite several years passing since their child’s death. The average duration of parental grief in terms of depression and anxiety was much longer than that of previous findings (Endo, Yonemoto, & Yamada, 2015). Furthermore, death-related factors, such as years since child’s death, parent’s age at child’s death, and child’s age at death could not predict the mental health of PLOCs in this study, which is inconsistent with the previous finding that time can help to alleviate grief symptoms in the bereaved (Bratt, Stenström, & Rennemark, 2016). In addition to the grief experienced after the death of a child, another reason for these results lies in the intricacies of Chinese culture. For PLOCs in China, they also encounter pressure within a cultural context, which may lead to persistently poor mental health status. Another persuasive explanation is the shortage of continuous social support throughout the years. Specifically, PLOCs were unable to receive actual or perceived instrumental or emotional social support from their adult only child. Moreover, the support from community, friends, and relatives may also be deficient because of their avoidance of social contacts (Zheng & Lawson, 2015).

The cause of death was also found to predict anxiety and depression symptoms among PLOCs. Specifically, parents whose child died of an accident reported more anxiety and depression symptoms than those whose child died of disease. This result is consistent with previous findings that sudden or violent deaths are a crucial risk factor for grief, depression, and anxiety disorders of bereaved parents (Harper et al., 2014). Accidental death of a child is a completely unexpected distressing event, without any ominous signs to help parents preemptively adapt to the death, and thus can be more likely to result in traumatic outcomes.
No difference in loneliness was found between the two groups in this study, which was inconsistent with our first hypothesis and previous studies on other types of bereavement (Van Der Houwen et al., 2010). This null effect of losing an only child on parents’ loneliness might be attributed to the following reasons. First, it is the spouses rather than adult children who typically provide companionship for older adults (Antonucci, Akiyama, & Takahashi, 2004; Broese van Groenou, de Boer, & Iedema, 2013). PLOCs could interact with and be supported or helped by their spouse through this difficult time (Gomez, Aparicio-perez, Sanchez-avila, Toller, & Braithwaite, 2009). As a result, social needs of bereaved parents might be partially compensated by the relationship with their spouses. Another reason may lie in the similar family structure observed in both groups. Specifically, both groups tended to be in empty-nest forms. Further, as a result of the family planning policy, specifically the one-child policy for urban families, most parents in the control group had only one child, who usually lived separately from them. Thus, compared with material support, emotional support is rarely provided to older parents (Wang & Shi, 2008), regardless of whether the child survives.

Given these salient and long-term negative outcomes from losing an only child, it is especially needed to explore effective interventions to help PLOCs recover. An effective method is to find the protective factors related to their mental health. Although some studies have investigated the factors that can influence the mental health of bereaved individuals, few have attempted to investigate which factors can play a beneficial role in the recovery of the mental health of PLOCs. Thus, in Study 2, we selected two protective factors, social support and resilience, to examine whether and how they can influence the mental health of PLOCs.

**Study 2: The Effects of Social Support and Resilience on the Mental Health of Parents Who Lost Their Only Child**

**Method**

**Participants.** A total of 632 randomly selected PLOCs were recruited from six urban districts of Beijing with the same recruitment procedure as Study 1. After deleting invalid respondents, the final sample was composed of 423 participants (valid respondent rate of 66.93%). Their sociodemographic characteristics and descriptive statistics related to their child’s death are listed in Supplementary Table 2.

**Measures**

**Social support.** Perceived social support and objective social support were the two aspects of social support examined. Perceived social support was measured
by the Perceived Social Support Scale (Wang et al., 1999). The scale includes 12 items, using a 7-point Likert scale ranging from 1 (strongly disagree) to 7 (strongly agree). Higher scores indicate higher levels of perceived social support. Exploratory factor analysis indicated a model of two factors. These factors were perceived support from others (including support from community, neighbors, and extended family) and perceived close family support. The CFA indicated that this two-factor model fit the data well ($\chi^2 = 15.41, df = 10, p = .12$, $\text{RMSEA} = .04, \text{CFI} = .99, \text{TLI} = .99$). Cronbach’s $\alpha$ coefficients of perceived support from others and perceived close family support were .85 and .88, respectively.

Objective social support was measured by two questions adopted from the Social Support Rating Scale (Wang et al., 1999). One question asked the participants to list support providers who gave them financial support and helped them solve problems when they encountered difficulties. The other question asked the participants to list support providers who gave them comfort and care when they encountered difficulties. The total number of providers of these two questions was used as an index of objectively received social support.

**Resilience.** The Resilient Trait Scale for Chinese Adults (Liang & Cheng, 2012) was used to assess the resilience trait in this study. The scale consists of five dimensions, including internal locus of control, problem-focused coping style, optimism, predisposition of accepting or utilizing social support, and acceptance. Each dimension contains six items on a 4-point Likert scale with 1 (strongly disagree) to 4 (strongly agree) rating choices. Higher scores indicate higher levels of resilience. The CFA indicated that a second-order factor model fit the data very well ($\chi^2 = 570.90, df = 204, p < .05$, $\text{RMSEA} = .07, \text{CFI} = .96, \text{TLI} = .95$). Cronbach’s $\alpha$ coefficient was .90 in this study.

**Mental health.** As Study 1 showed null effects on loneliness, depression and anxiety were selected as the indicators of mental health in Study 2. Consistent with Study 1, the GAI and GDS were used to measure anxiety and depression of the participants. CFAs verified a one-factor structure for GAI ($\chi^2 = 329.65, df = 170, p < .05$, $\text{RMSEA} = .05, \text{CFI} = .99, \text{TLI} = .98$) and GDS ($\chi^2 = 192.39, df = 90, p < .05$, $\text{RMSEA} = .05, \text{CFI} = .96, \text{TLI} = .95$), respectively.

**Statistical analyses.** First, CFAs were performed to establish a valid model of each variable. Second, a model was estimated with social support (including perceived and objective social support) as the predictor, mental health (including anxiety and depression) as the outcome, and resilience as a mediator in the model. These were all latent variables further measured with the observed items. Finally, direct and indirect effects were tested with the bootstrapping method of 1,000 samples, generating a bias-corrected percentile-based bootstrap with 95% confidence intervals. This method is a nonparametric resampling procedure which can
overcome the problem of low power in traditional $z$ statistics and does not need to assume multivariate normality of the sampling distribution (Preacher & Hayes, 2008). Analyses were performed using Mplus Version 7.

**Results**

CFA was applied to the sample to test the models in each scale. The results indicated that the constructs of the GDS and GAI were measured well, similar to Study 1. The mediating model was subsequently estimated with perceived social support (i.e., perceived support from others and perceived close family support) and objective social support as the predictors, mental health (i.e., anxiety and depression) as the outcome, and resilience as the mediator. The model fit the data well ($\chi^2 = 2683.92$, $df = 1998$, $p < 0.01$, $RMSEA = .03$, $CFI = .97$, $TLI = .96$). Standardized direct and indirect effects are displayed in Table 4.

Small, but significant mediating effects were found (displayed bold in Table 4). However, the direct effects were still dominant. Resilience slightly mediated the effects of perceived family support on both anxiety and depression. Specifically, as participants perceived more close family support, they tended to present higher resilience, which in turn, reduced their anxiety and depression.

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**Table 4. Standardized Direct and Indirect Effects of Bootstrapped Mediation Model.**

<table>
<thead>
<tr>
<th>DV</th>
<th>IV</th>
<th>Effect of IV on MV</th>
<th>Effect of MV on DV</th>
<th>Direct effect of IV</th>
<th>Indirect effect of IV 95% CI [lower, upper]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anxiety</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Perceived support of others</td>
<td>.13*</td>
<td>.07</td>
<td>-.03 [-.06, .01]</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Perceived close family support</td>
<td>.27***</td>
<td>-.32***</td>
<td>-.05 [-.10, .00]</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Objective support</td>
<td>.13*</td>
<td>-.14*</td>
<td>-.03 [-.05, .00]</td>
<td></td>
</tr>
<tr>
<td>Depression</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Perceived support of others</td>
<td>.13*</td>
<td>.02</td>
<td>-.02 [-.05, .01]</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Perceived close family support</td>
<td>.27***</td>
<td>-.33**</td>
<td>-.04 [-.09, -.01]</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Objective support</td>
<td>.13*</td>
<td>-.27*</td>
<td>-.02 [-.04, .00]</td>
<td></td>
</tr>
</tbody>
</table>

**Note.** DV = dependent variable; IV = independent variable; MV = mediating variable.

***$p < .01$, **$p < .05$, *$p < .05$.**
Discussion

In a different, larger sample, the current study found that the constructs of the anxiety and depression scale were the same as those observed in Study 1, demonstrating the validity of these two measurements among PLOCs. Based on these measurements, the key finding of the current study was that PLOCs with more social support and higher resilience reported less anxiety and depression. This result mostly supports Hypothesis 2 and indicates that social support and resilience are protective for PLOCs’ mental health.

More precisely, both perceived social support and objective social support can reduce anxiety and depression among PLOCs. The current findings are in line with previous findings on other stressors (Haber et al., 2007), as well as bereavement (Gear, 2014; Van Der Houwen et al., 2010). The buffering model indicates that social support can be helpful only under stressful situations, as it acts like a barrier in protecting mental and physical health from the impact of traumatic events (Cohen & Wills, 1985). The main effect model poses that social support influences individuals’ mental health in the absence of stress, in that people with higher social support have better mental health than those with lower social support in common situations (Cohen & Wills, 1985). Despite the discrepancies in the functioning mechanisms of social support, both models suggest that it is undoubtedly beneficial for the mental health of PLOCs.

However, it is interesting to find that close family support outweighed the support from community or other people in predicting the PLOCs’ depression and anxiety. This result is in line with previous research, which found that close family, rather than community-based support, is essential for the life satisfaction of older Chinese adults (Shen & Yeatts, 2013). Compared with other social support, the superiority of family support in coping has also been suggested by previous research (Pinkerton & Dolan, 2007). Chinese culture places a large emphasis on family support, as it is a highly family-oriented society. Family has been characterized as a “strictly loyalty-based structure tying to a close-knit network of kinship” (Shen & Yeatts, 2013, p. 191), which makes it the main source of support for older people in China. Although the Chinese government has been making efforts to develop community-based support organizations (such as the Spiritual Homes in Beijing, which were built as social clubs for PLOCs only), these are still at the early stages of development. For PLOCs, their low self-esteem prevents them from participating in regular community-based social activities, as they are afraid of being exposed to children relevant topics (Zheng & Lawson, 2015). Consequently, it is acceptable that PLOCs may consider their spouses or other family members as a safer source of support. The current results have demonstrated that perceived close family support is an important external protective source that can directly influence anxiety and depression. Further, the current findings provide evidence that this type of support can indirectly influence mental health through resilience, which is an important intrapersonal protective factor intrinsic to PLOCs. These findings echo
those of previous research (Bernabe & Botia, 2016; Koelmel et al., 2016; Luthar et al., 2000; Ozbay et al., 2008).

In addition, the current study also supports the assumption that resilience is an important protective factor for the mental health of PLOCs as its associations with depression and anxiety were found to be significant in this study. This is consistent with previous studies of bereaved samples (Bonanno et al., 2005). As resilience has been characterized as an ability to maintain relatively stable, healthy psychological or physical functioning during disruptive events (Block & Kremen, 1996), individuals with higher resilience can generate and maintain constructive relationships, find creative solutions to difficult situations, and develop positive expectations about life (Hjemdal, Vogel, Solem, Hagen, & Stiles, 2011). Consequently, they tend to present fewer mental disorders and depression symptoms after stressful events occur.

Implications and Conclusions

In summary, the findings reveal that PLOCs reported more anxiety and depression symptoms than do the nonbereaved parents. Among the causes of death, accidents were more detrimental than others for the mental health of PLOCs. Furthermore, this study provided some useful implications for restoring the mental health of this population. The results about the protective factors of PLOCs’ mental health indicated that social support, especially that which is provided by close family, and resilience are both beneficial. Plus, the perceived close family support would play an additional role among the protective factors as it can improve the PLOCs’ mental health by improving resilience.

The results are especially valuable for the government in making or revising relevant public policies for this population. Although all of the PLOCs in this study are currently covered by special welfare policies of the government, such as yearly living expenses subsidies and medical subsidies (Beijing Population and Family Planning Commission, 2008), their emotional health is still of concern. Increased effort on the part of governments should be targeted at restoring and sustaining PLOCs’ psychological well-being. For example, the government may cooperate with nongovernmental organizations or volunteers to provide training to social workers to offer psychological interventions (Yan & Wu, 2013). In addition, community workers may allocate additional resources to those whose children have died in accidents.

More importantly, from the perspective of protective factors, many useful methods could be used to help PLOCs. First, it is helpful to establish or extend a workable social network for the PLOCs as much as possible. Expanding connections, for instance, could be ideal to set up some daily social interactions, with Spirit Homes serving as bases. These types of spaces are only open to PLOCs in the community, and the similarity in traumatic events experienced
by these individuals could insulate PLOCs from negative cultural messages (Frable, Platt, & Hoey, 1998), possibly improving their mental health (Lichtenthal et al., 2015). Second, it will be useful to teach adaptive skills to promote the family relationship, especially between the members of a couple among PLOCs, as previous research found that the marital relationship can act as a source of stability and support throughout the bereavement and individual adjustment process when losing a child (Albuquerque, Pereira, & Narciso, 2015; Gomez et al., 2009; Song et al., 2010). Finally, improving resilience is another possible way to promote the mental health of PLOCs, given that methods like learning new coping strategies are helpful to enhance one’s resilience (Bonanno, Westphal, & Mancini, 2011).

**Limitations and Future Directions**

To our knowledge, this study has used the largest sample size of a population that is unique and hard to access. The findings from this study contribute a new understanding of the impacts of losing an only child on mental health outcomes, as well as the extent that social support and resilience can be helpful for PLOCs. Despite the strengths, the limitations of the current study should be considered before wide generalization. First, all of our samples were recruited from Beijing, which might not represent PLOCs in other regions given China’s huge diversity in area and people. Future research should recruit PLOCs from other regions of the country to retest the findings. Second, the samples in this study might only have reflected those who did not reject social contact and willing to take part in our study, which might underestimate the mental health problems of PLOCs. Third, this study is a cross-sectional study based on the assumption that the timing of the measurement is not tantamount to the temporal sequence of all the variables. Causal inferences need be further corroborated. Longitudinal data are extremely valuable to reveal the protective effects of social support and resilience on mental health across time.

**Author Contributions**

X. C. collected the data, performed analyses on all samples, interpreted data, and wrote the manuscript. C. Y. analyzed the data and provided critical revision of the article. D. W. contributed to the conception and design of the study, provided important interpretation to the results, revised the paper, and acted as corresponding author.

**Declaration of Conflicting Interests**

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.
Funding
The author(s) disclosed receipt of the following financial support for the research, authorship, and/or publication of this article: This work was supported by Fundamental Research Funds for the Central Universities under Grant 310400078.

Supplemental Material
Supplementary material for this article is available online.

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