Research Article

Stressor Trajectories among Older Adults with Disabilities and Positive Caregiving Experiences among Family Caregivers in Urban China

Nan Lu,1 Vivian W. Q. Lou,2,3 and Shan Mao3

1Department of Social Work and Social Policy, School of Sociology and Population Studies, Renmin University of China, Beijing 100872, China
2Department of Social Work & Social Administration, The University of Hong Kong, Hong Kong SAR, China
3Sau Po Centre on Ageing, The University of Hong Kong, Hong Kong SAR, China

Correspondence should be addressed to Vivian W. Q. Lou; wlou@hku.hk

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This study investigated the trajectory patterns of activities of daily living (ADLs) and cognitive function among older urban Chinese adults with disabilities and their influence on their family caregivers’ (i.e., spouse and adult children) positive caregiving experiences. Data were derived from the three-wave longitudinal panel study titled “Longitudinal Study on Family Caregivers for Frail Older Adults Aged 75 or Above in Shanghai.” A total of 251 older adults and their spouse/adult child caregivers participated in the 2010, 2013, and 2016 waves and were included in the final analytic sample. Growth curve modeling was applied to examine the proposed model. The findings suggest that ADLs and cognitive function trajectories declined over six years. Changes were predicted based on the older adults’ age and education levels. In 2016, the change rate of cognitive function trajectory was associated with self-affirmation and life enrichment. Neither the initial status (intercept) nor the change rates (slope) of the ADLs’ trajectory were associated with the two dimensions of positive caregiving experiences. This study extended the stress process model by demonstrating the trajectory patterns of stressors and their influence on positive caregiving experiences. Change rates in older adults’ cognitive function were key risk factors for positive caregiving experiences. This finding has important implications for family-based care systems in China.

1. Introduction

The population worldwide is aging rapidly, especially people aged 80 years and above. By 2050, older adults aged 60 and above will reach 2.1 billion, and the number of older adults aged 80 and above is predicted to increase to 426 million [1]. Older adults usually experience functional physical decline and cognitive impairment [2–4]. Dementia is a common brain disease among older adults. In 2015, 46.8 million people worldwide had dementia, and this number is expected to increase to 131.5 million by 2050 [5]. China has the largest population of older adults and people with dementia, accounting for approximately 25% of older adults and patients with dementia worldwide [6, 7].

Data from the Seventh National Population Census demonstrated that there were more than 190 million people aged 65 and above in 2020 (13.5% of the total population) [8], and the proportion is predicted to reach 26% (approximately 366 million) by 2050 [6]. Owing to the prolonged life expectancy, older adults also have a high risk of disability. Activities of daily living (ADLs), a common indicator to measure functional limitations and disability, could reflect older peoples’ self-care ability and independence. According to the United Nations, over 46% of older adults aged 60 and above have functional limitations, and more than 250 million older adults have moderate to severe disabilities [9]. In China, it is estimated that about 40 million older adults were disabled in 2020, and the number will increase to 63 million by 2030 [10].
The deteriorating health conditions of older adults bring great challenges and stress to caregivers. According to the stress process model, different types of stressors, perceived stress, and support resources have interrelated associations that could further influence caregivers’ well-being [11, 12]. Care recipients’ health conditions, including physical and cognitive function, were regarded as objective primary stressors, which were found to be associated with caregiving experiences [13, 14]. Older adults with cognitive impairment and disabilities have more care needs than their healthy counterparts, which could impose a heavy burden on their caregivers in many respects, including time dependence and physical, social, emotional, and developmental burdens [15–18].

The original theoretical model and relevant empirical studies have mainly focused on the influence of stressors on negative caregiving experiences (e.g., caregiving burden and stress). Only a limited number of studies have examined the association between physical and cognitive function in older adults and positive caregiving experiences. As another important aspect of the caregiving experience, a positive experience of caregiving not only contributes to the improvement in caregivers’ physical and mental well-being [19] but is also beneficial for the continuance of care provision [20, 21]. Therefore, it is important to examine the association between different types of stressors and positive caregiving experiences, which could enrich the empirical evidence on the impact factors of caregiving experiences and provide valuable guidance for interventions to promote positive caregiving experiences.

In contrast to caregiver burden, positive caregiving experiences refer to caregivers’ positive perceptions of their caregiving experiences, including rewards and gains, satisfaction, self-efficacy, feelings of enjoyment, and improved relationships with others [22–24]. Positive caregiving experiences have two important dimensions: self-affirmation and life enrichment. The former refers to the confidence, capacity, positive self-image, and self-esteem that individuals can obtain from their caregiver roles, while the latter measures the role of caregiving in promoting social relationships and meaning in life [22]. Previous studies have demonstrated that caregivers’ age, marital status, education level, income, psychological characteristics (e.g., self-esteem, motivation regarding caregiving, emotional bonding, appreciation from others), coping strategies, and social capital are associated with a positive experience of caregiving [21, 23, 25–27]. In addition, many studies have suggested that care recipients’ physical impairment, improvements in recovery, cognitive status, and behavioral problems are significantly associated with positive caregiving experiences among Dutch, American, Thai, and Chinese caregivers [23, 25–29]. Some Chinese studies have demonstrated that family caregivers of older adults with disabilities often provide more physical care and experience time conflicts, insufficient care abilities, economic hardships, and perceived excessive caregiving stress [30, 31]. A study in the US reported that performing medical or nursing tasks was positively associated with caregiving gains among spousal caregivers of older adults with functional disabilities [32]. However, these studies mainly used cross-sectional data to assess the influence of care recipients’ health conditions on caregivers’ experiences and feelings; research examining the association between the trajectory patterns of ADLs, cognitive functions, and positive caregiving experiences is lacking.

Relevant studies have reported different developmental patterns of cognitive function and physical disability in older adults [33, 34]. However, in addition to the different intercept levels, the slopes of these patterns can be classified into two categories: declining and stable. Although the decline rates may vary across age groups, the declining trajectory is most common later in life. Moreover, findings have also suggested that older adults aged 70 and above are more likely to experience a faster rate of functional decline than other age groups [33, 35]. Given the characteristics of our study sample—that is, all the respondents were disabled and aged 75 years and older—this study built latent growth curve models to explore the trajectories of cognitive function and ADLs among older adults with disabilities. In the present study, disability was defined as a physical or physiological condition that limited older adults’ ability to perform ADL tasks [36, 37].

Furthermore, regarding the factors influencing older adults’ physical and cognitive function, cross-sectional studies have often reported that demographic variables (e.g., age and sex), socioeconomic indicators (e.g., education and income), and health behaviors were predictors of cognitive function and ADLs in older adults. However, there were some differences in the longitudinal study findings. For example, previous studies found that older adults’ age, gender, education level, and health behaviors were associated with the intercept of cognitive function, whereas their associations with the slope were inconsistent [38]. Consequently, it is necessary to examine the demographic and socioeconomic differences in cognitive and physical function decline. Therefore, these variables were included in the latent growth curve models.

In summary, existing studies have mainly used cross-sectional data to examine the association between older adults’ physical disabilities and cognitive decline and their caregivers’ experience (e.g., caregiving burden). The associations between older adults’ ADL and cognitive function trajectories and their caregivers’ experience are understudied, especially regarding the positive aspects of caregivers’ experience. For example, rapid cognitive decline might not only increase caregivers’ workload in daily caregiving tasks but also increase their difficulties in understanding the care recipients and keeping them calm, safe, and happy. These outcomes could adversely affect caregivers’ subjective evaluations of their confidence, capacities, meaning of life, and achievements, which are based on their caregiving experiences [22].

Based on a literature review and the stress process model, this study examined the effects of cognitive and physical function (ADLs) trajectories on positive caregiving experiences. The research hypotheses are as follows:
The initial cognitive function status (i.e., intercept) of older adults with disabilities is associated with positive caregiving experiences. The rate of change (i.e., slope) in cognitive function among older adults with disabilities is associated with positive caregiving experiences. The initial status (i.e., intercept) of ADLs among older adults with disabilities is associated with positive caregiving experiences. The rate of change (i.e., slope) in ADLs among older adults with disabilities is associated with positive caregiving experiences.

2. Materials and Methods

2.1. Data Source. The data for this study were obtained from the 2010, 2013, and 2016 waves of the “Longitudinal Study on Family Caregivers for Frail Older Adults Aged 75 or Above in Shanghai.” According to the most recent national census in China conducted in 2020, the local population was around 24 million in Shanghai, with around one-fourth aged 60 years and above. This figure exceeded the national average level (18.7% in 2020). According to a recent empirical study, older adults with disabilities are cared for by family members, especially spouses and adult children [39]. As one of the economic centers of China, Shanghai has developed a range of aged care services in local communities and aims to develop age-friendly communities in all urban and rural areas by 2035. Additionally, Shanghai was one of the first cities in China to conduct pilot programs on long-term care insurance.

In the 2010 baseline, a quota sampling approach was employed to select disabled older adult-family caregiver dyads. Six districts were randomly selected from the 17 districts in Shanghai. One street office was randomly selected from each district. From each street office, 120 older adults with disabilities and their family caregivers were selected based on the following criteria: (a) aged at least 75 years, (b) had at least two limitations of ADLs or equivalent (scored 90 or less based on the ADLs scale, range 0–100; higher scores indicate better functional health), (c) lived in local communities and had Shanghai household registration status, and (d) had a caregiver who provided care to the care recipients. The criteria for caregivers also included age (at least 18 years) and the nature of caregiving (e.g., unpaid work). Furthermore, the Short Portable Mental Status Questionnaire (SPMSQ) was used to assess cognitive function in older adults with disabilities [40]. The cutoff points were 6 for those who completed high school education or lower and 7 for those who completed college education or higher. For those who did not pass the cognitive test, proxies were used to complete the rest of the survey (details of the SPMSQ are provided in the measurement section).

Six-hour standardized training was provided to all interviewers before data collection. The training sessions covered screening, informed consent forms, quality assurance, interview strategy, logic, answering patterns in all questionnaire sections, and coding methods. Additionally, one supervisor, six lecturers, and postgraduate students from a local university in Shanghai were assigned to each of the six neighborhoods and were responsible for project administration and quality assurance, such as supervising screening procedures, solving potential problems in the interview fields, and making decisions regarding the use of proxies. The principal investigator and co-investigators were also available to provide advice and monitor the progress of data collection.

A total of 720 care recipient-caregiver dyads were successfully interviewed during the baseline survey; 95.4% were cared for by spouses (35.7%) and adult children (59.7%). As mortality was the major cause of sample attrition (more than 20% in each follow-up wave), new respondents were added to the 2013 and 2016 waves. The sample sizes for the 2013 and 2016 waves were 823 and 733, respectively. In this study, we included only older adults with disabilities who participated in all three waves of the survey and were cared for by their spouses and adult children, generating a final sample size of 251.

3. Measures

3.1. Positive Caregiving Experience. This study treated positive caregiving experience from the 2016 wave as a dependent variable and assessed them using the Positive Aspects of Caregiving Scale [22]. This 11-item scale has two dimensions: six items are about self-affirmation, and the other five are about life enrichment. Regarding the former six items, the respondents were asked whether their caregiving role improved their social relationships with others and whether they experienced growth in terms of meaning, optimism, and skill learning. Responses were measured using a 4-point Likert scale ranging from 0 = completely disagree, 2 = neutral to 4 = completely agree. Cronbach’s alpha estimates were 0.964 for self-affirmation and 0.959 for life enrichment based on the 2016 wave of the survey (this scale was only available in the 2016 wave).

3.2. Activities of Daily Living. The 10-item Barthel Index has been used to assess ADLs among older adults with disabilities [41]. The 10 ADL tasks included walking, going up and down stairs, bathing, dressing, personal hygiene, feeding, moving between bed and chair, using toilets, bladder control, and bowel continence. Responses were assessed using a three-point Likert scale ranging from 0 = very difficult and could not independently complete the ADL task, 5 = difficult and needed assistance to 10 = no difficulty at all and could independently complete the ADL task. Summed scores were calculated to represent the functional health levels of the older adults and ranged from 0 to 100. Higher scores indicate better functional health. Cronbach’s alpha estimates for this scale were 0.894, 0.814, and 0.811 in the 2010, 2013, and 2016 survey waves, respectively.
3.3. Cognitive Function. The 10-item SPMSQ was used to measure cognitive function [40]. The questions were about calculation, time (e.g., week and month), older adults’ age, home address, the districts where their homes were located, the date of important Chinese festivals, the date when China was founded, and the names of the Chinese president and the first premier in China. The responses were assessed using a binary variable (0 = wrong and 1 = correct). Summed scores were used to represent the levels of cognitive function, ranging from 0 to 10. Higher scores indicate better cognitive function. Cronbach’s alpha estimates of this cognitive function scale were 0.779, 0.820, and 0.927 for the 2010, 2013, and 2016 waves, respectively.

3.4. Determinants of Stressor Trajectories and Positive Caregiving Experience. This study’s antecedents of stressor trajectories included age, sex, living arrangement, educational attainment, financial status appraisals, general life satisfaction, and the number of chronic diseases. These variables were collected from the baseline surveys, and the control variables of positive caregiving experiences included caregivers’ age, sex, marital status, educational level, and self-reported health, which were collected from the 2016 wave.

Age was calculated based on the respondent’s birth year. Gender, education, and living arrangements were assessed using binary variables (0 = men, 1 = women; 0 = lived with others, 1 = lived alone). Education was also recorded as a binary variable (care recipient: 0 = primary school education or lower, 1 = secondary school education or higher; caregiver: 0 = secondary school education or lower, and 1 = high school education or higher). Caregivers were asked to assess their general health status (0 = very poor/poor/fair and 1 = good/excellent). Furthermore, the older adults were asked whether they had adequate financial resources to cover their living costs (0 = very inadequate, 2 = just covered living costs, and 4 = more than sufficient). Regarding general life satisfaction, care recipients were asked whether they were satisfied with their current lives (0 = very dissatisfied, 2 = fair, and 4 = very satisfied). Finally, care recipients were asked whether they had the following doctor-diagnosed chronic diseases: cerebrovascular, musculoskeletal, digestive system, circulatory system, endocrine and metabolic, and respiratory system diseases (0 = no and 1 = yes). The summed scores were calculated to represent the number of chronic diseases.

3.5. Analytic Strategy. From a structural equation modeling perspective, a growth curve modeling approach was applied to test the proposed model [42, 43]. The analytical procedures for growth curve modeling were as follows. In the first step, two unconditional growth curve models were estimated to test the trajectories of ADLs and cognitive function. Second, older adults’ sociodemographic characteristics, financial strain, life satisfaction, and physical health at baseline were added to the models to test their relationships with the intercept (i.e., initial status) and slopes (i.e., change rate) of the two trajectories. In the third step, we added positive caregiving experiences from the 2016 wave into the model and regressed its indicators on the intercept and slope of ADLs and cognitive function trajectories. Caregivers’ sociodemographic characteristics and health status were entered into the model. A set of fit indices were used to determine whether the model adequately fit the data, including a chi-square test ($\chi^2$; nonsignificant estimates indicate good model fit), root mean square error of approximation (RMSEA; value less than 0.08), comparative fit index (CFI; value greater than 0.90), and standardized root mean square residual (SRMR; value less than 0.05) [44].

As discussed previously, the analysis was based on respondents who participated in all three waves of the survey. A sensitivity analysis was conducted by including all respondents from the baseline survey and rerunning the model, generating similar results.

4. Results

4.1. Sociodemographic Characteristics of the Sample. The sociodemographic characteristics of older adults with disabilities are presented in Table 1. The average ages of the older adults and their family caregivers were 81.08 and 64.10 years, respectively. Approximately two-thirds of the participants were female, and approximately one-third had completed secondary school education or higher. Approximately half were satisfied with their financial status, and two-thirds were satisfied or very satisfied with their lives at baseline. In total, 10.4% of the care recipients lived alone. On average, each elderly care recipient had 2.27 chronic diseases at baseline. Approximately one-fifth were cared for by their spouses, and nearly 80% were cared for by their adult children. In the 2010, 2013, and 2016 waves, the average ADL scores were 81.29, 79.50, and 75.08, respectively. The average cognitive function scores were 7.86, 7.23, and 6.99 in the 2010, 2013, and 2016 waves, respectively. These trends declined over time.

4.2. Growth Curve Modeling. Regarding the unconditional models, we examined the model fit by calculating a range of fit index estimates for the ADL trajectory model [$\chi^2(1) = 2.956, p = 0.0856$, RMSEA = 0.088, CFI = 0.985, SRMR = 0.002] and cognitive function trajectory model [$\chi^2(1) = 2.164, p = 0.1412$, RMSEA = 0.068, CFI = 0.841, SRMR = 0.002]. Although the RMSEA value for the ADL trajectory model and the CFI value for the cognitive function trajectory model did not meet the criteria, all other fit indices showed good results, indicating an adequate model fit for both models. The results of the unconditional model demonstrated declining trajectory patterns for ADLs and cognitive functions.

Determinants of ADLs and cognitive function trajectories were added to the model. The estimates of fit indices suggested a good model fit [ADL trajectory: $\chi^2(14) = 21.101, p = 0.0991$, RMSEA = 0.045, CFI = 0.956, SRMR = 0.026; cognitive function trajectory: $\chi^2(14) = 17.956, p = 0.2088$, RMSEA = 0.034, CFI = 0.929, SRMR = 0.032]. The results demonstrated that age was significantly associated with change rates in the ADL and cognitive function trajectories [ADL trajectory: $b = -0.455, p < 0.01$; cognitive function trajectory: $b = -0.064, p < 0.001$]. Education was associated
Table 1: Sociodemographic characteristics of older adults with disabilities (n = 251).

<table>
<thead>
<tr>
<th>Variables</th>
<th>n (%)</th>
<th>Mean (SD)</th>
</tr>
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<tbody>
<tr>
<td><strong>Age</strong></td>
<td></td>
<td></td>
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<tr>
<td>75–79 years</td>
<td>110 (43.8)</td>
<td></td>
</tr>
<tr>
<td>80 years and older</td>
<td>141 (56.2)</td>
<td></td>
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<tr>
<td><strong>Gender</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Women</td>
<td>163 (64.9)</td>
<td></td>
</tr>
<tr>
<td>Men</td>
<td>88 (35.1)</td>
<td></td>
</tr>
<tr>
<td><strong>Education</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Primary school or lower</td>
<td>155 (61.8)</td>
<td></td>
</tr>
<tr>
<td>Secondary school or higher</td>
<td>96 (38.2)</td>
<td></td>
</tr>
<tr>
<td><strong>Financial satisfaction</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Very dissatisfied/dissatisfied/fair</td>
<td>136 (54.2)</td>
<td></td>
</tr>
<tr>
<td>Satisfied/very satisfied</td>
<td>115 (45.8)</td>
<td></td>
</tr>
<tr>
<td>Lived with others</td>
<td>225 (89.6)</td>
<td></td>
</tr>
<tr>
<td><strong>Relationship with caregivers</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Spouse</td>
<td>55 (21.9)</td>
<td></td>
</tr>
<tr>
<td>Adult children</td>
<td>196 (78.1)</td>
<td></td>
</tr>
<tr>
<td><strong>General life satisfaction</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Very dissatisfied/dissatisfied/fair</td>
<td>82 (32.7)</td>
<td></td>
</tr>
<tr>
<td>Satisfied/very satisfied</td>
<td>169 (67.3)</td>
<td></td>
</tr>
<tr>
<td>Number of chronic diseases in 2010</td>
<td>2.27 (1.21)</td>
<td></td>
</tr>
<tr>
<td>ADLs in 2010</td>
<td>81.29 (12.96)</td>
<td></td>
</tr>
<tr>
<td>ADLs in 2013</td>
<td>79.50 (13.77)</td>
<td></td>
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<tr>
<td>ADLs in 2016</td>
<td>75.08 (20.49)</td>
<td></td>
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<tr>
<td>Cognitive function in 2010</td>
<td>7.86 (1.83)</td>
<td></td>
</tr>
<tr>
<td>Cognitive function in 2013</td>
<td>7.23 (1.70)</td>
<td></td>
</tr>
<tr>
<td>Cognitive function in 2016</td>
<td>6.99 (2.42)</td>
<td></td>
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</tbody>
</table>

with the intercept and slope of the cognitive function trajectory (intercept: $b = 1.061, p < 0.001$; slope: $b = -0.370, p < 0.05$). Older adults' general life satisfaction, appraisals of financial status, and the number of chronic diseases at the baseline were significantly associated with the initial status of the ADL trajectory [life satisfaction: $b = 3.835, p < 0.01$; financial status: $b = 1.957, p < 0.01$; number of diseases: $b = -2.446, p < 0.001$].

Finally, we added two positive caregiving experiences and control variables to the models of ADL and cognitive function trajectories. The fit index estimates also indicate good model fit [ADL trajectory: $\chi^2(28) = 33.254, p = 0.2265$, RMSEA = 0.027, CFI = 0.989, SRMR = 0.045; cognitive function trajectory: $\chi^2(22) = 28.082, p = 0.1730$, RMSEA = 0.033, CFI = 0.984, SRMR = 0.045]. The results demonstrated that the change rate of the cognitive function trajectory was significantly associated with self-affirmation and life enrichment [self-affirmation: $b = 4.225, p < 0.05$; life enrichment: $b = 2.519, p < 0.05$]. However, neither the intercept nor the slope of the ADL trajectory was associated with the two positive caregiving experience variables (all $p > 0.05$). None of the caregivers’ control variables were significantly associated with self-affirmation or life enrichment (all $p > 0.05$; see Figure 1).

5. Discussion

This study is one of the first attempts to test the influence of ADL and cognitive function trajectories on positive caregiving experiences among family caregivers, especially in the Chinese context. The findings identified a significant role for the slope of the cognitive function trajectory in predicting the levels of life enrichment and self-affirmation. Unlike previous studies that mainly focused on the relationship between stressors and negative caregiving experiences, such as caregiving burden, this study developed theoretical contributions by examining the dynamic status of stressors and their effects on positive caregiving experiences. The study findings expanded the original stress process model and added new empirical evidence for future policies and interventions concerning family caregiving for older adults with disabilities.

These findings make a new contribution by testing the associations between the intercepts and slopes of stressor trajectories and positive caregiving experiences. The findings demonstrate that faster rates of cognitive decline, rather than initial cognitive function status, are more likely to lead to lower levels of positive caregiving experiences. As previously discussed, positive caregiving experiences are related to feelings of growth, reward, enjoyment, and improved social relationships [22, 23]. A sense of accomplishment, mutuality, and gratification depend on effective interactions between care recipients and caregivers. Cognitive decline may negatively affect personal interactions and relationships.

All respondents had ADL limitations in the baseline survey, and more than 85% passed the cognitive test. In this case, caregivers may have rich experience and effective coping strategies to assist their recipients in completing ADL tasks. In contrast, cognitive decline might contribute to the new challenges caregivers encounter in caregiving tasks. For example, cognitive decline in care recipients might reduce their caregivers’ feelings of role fulfillment, meaning in life, and family functionality by causing emotionally overwhelming situations in which caregivers might not have adequate coping cognitive strategies [24].

Regarding stressor trajectory patterns and their antecedents, the findings of this study identified declining trajectory patterns of ADLs and cognitive function among older adults with disabilities aged at least 75 years in urban Chinese contexts. This was consistent with previous findings [33, 34]. Age was associated with the rates of change in ADL and cognitive function trajectories, which is consistent with previous studies [2–4]. Age-related decline in these two health domains and their influence on caregiver outcomes should be given particular attention in family caregiving research and interventions. For the ADL trajectory, older adults’ satisfaction with their financial status, general life situations, and the number of chronic diseases were associated with the initial status but not the change rate. A surprising finding is that education is negatively associated with the rate of change in the cognitive function trajectory. In other words, compared with the low-education group, the high-education group was more likely to have faster rates of cognitive decline. This result should be interpreted by considering mortality selection bias. This bias is a common problem in longitudinal panel studies of older populations [45]. This study is no exception, especially considering that the target population comprises adults with disabilities who are relatively old. This means that compared to older...
survivors with lower education levels and lower initial status of cognitive function at baseline, older survivors with higher education backgrounds with a higher initial status of baseline cognitive function tended to have faster decline rates between 2010 and 2016. This might be partially because older adults with high educational levels still have difficulty maintaining relatively high levels of cognitive function at a very old age.

These findings have implications for policies and interventions. First, cognitive decline over time could be considered a risk factor for positive caregiving experiences and was used in the screening instrument to identify family caregivers who were at risk of high levels of burden and low levels of positive caregiving experiences. Second, community-based interventions should focus on designing programs and supporting family caregivers of recipients with rapid cognitive decline or impairments. Training and education programs could also be provided to enhance their knowledge of cognitive decline or impairments. Training and education programs could also be provided to enhance their knowledge of cognitive health, skills in caring for older adults with cognitive impairment, and effective communication methods. Third, the contributions of family caregivers could be acknowledged through financial incentives, tax reductions, and benefits from long-term care insurance. This could help promote self-value and self-efficacy. Finally, preventive interventions should be conducted to help older adults with cognitive impairment, and their family caregivers should promote rewards and gains in caregiving activities.

This study has the following limitations. First, as previously discussed, this study has a mortality selection bias. The worst outcome of the decline in cognitive function and ADLs was mortality. This means that only survivors completed all three waves, which could have biased the results. We argue that the impact of stressor trajectories on positive caregiving experiences has been underestimated. Further longitudinal studies with larger sample sizes are needed to replicate the results of this study. Second, proxies were used for care recipients who failed the cognitive tests. This could affect the accuracy of the information. Third, the sample was not randomly selected, and it was from a single large city in China. This limits the empirical generalizability of our findings. Data from rural areas, small cities, and other metropolitan regions should be collected to further examine the role of positive caregiving experiences in the stress process model. Fourth, positive caregiving experiences were available only in the 2016 waves. Future studies should examine the trajectory patterns of positive caregiving experiences and their interplay with stress trajectories in rural and urban Chinese contexts.

**Data Availability**

The dataset for this study is available from the corresponding author upon reasonable request.

**Conflicts of Interest**

The authors declare that there are no conflicts of interest regarding the publication of this paper.

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**Figure 1** The influence of ADL and cognitive function trajectories on positive caregiving experience among older adults. Notes: *p < 0.05; **p < 0.01; ***p < 0.001; only significant results of the control variables were presented; LS = general life satisfaction, FS = appraisal of financial status, NOD = number of chronic diseases, intercept 1 = intercept of ADL trajectory, slope 1 = slope of ADL trajectory, intercept 2 = intercept of cognitive function trajectory, and slope 2 = slope of cognitive function trajectory.
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