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## Abstract

The Powerful Tools for Caregivers (PTC) program is designed to help caregivers develop skills to improve their self-efficacy in caregiving. To demonstrate the effectiveness of the PTC program in Boise, Idaho, the program's pre-survey ( $n = 277$ ), end-of-program survey ( $n = 131$ ), and 6-month follow-up post-survey data ( $n = 100$ ) collected between 2011 and 2017 were analyzed in this study. The end-of-program survey data indicated that caregivers viewed the quality of the program to be excellent and that all of them felt more confident as a caregiver. Factor analysis and reliability testing on the pre-survey data confirmed that seven questions included in the pre- and 6-month follow-up post-survey instruments reliably measured a single factor named as caregiver confidence. A paired samples *t*-test on 76 complete sets of pre- and 6-month follow-up post-survey data on the seven questions revealed that caregivers improved their confidence in caregiving to a statistically significant level ( $p < .001$ ,  $d = .45$ ). Additional paired samples *t*-tests on each of the seven questions with the Bonferroni correction showed statistically significant improvements in three areas: Making tough decisions ( $p < .001$ ,  $d = .53$ ), coping with emotions ( $p < .001$ ,  $d = .54$ ), and using stress-reducing activities ( $p < .007$ ,  $d = .33$ ). Caregivers experienced the greatest improvement in their confidence in making tough decisions. Despite these significant improvements, caregivers still struggled with finding ways to reduce stress and manage their emotions associated with caregiving as shown by the lowest pre- and 6-month follow-up post-survey scores. In addition to the study results, several considerations when synthesizing PTC research results are discussed.

**Keywords:** powerful tools for caregivers, caregiver confidence, factor analysis, reliability

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More than 43 million American adults care for disabled or aging family members and other loved ones (The NAC and the AARP Public Policy Institute, 2015). The role of caregiver is often a progressive one that evolves over time requiring increasing amounts of effort and involves changing tasks (Alves, Teuxera, Azevedo, Duarte, & Paul, 2016) dependent on the care recipient's functioning, available support (medical or social), and living situation (Holland et al., 2011). Caregivers' tasks exist on a wide spectrum ranging from offering relatively minimal care such as housekeeping, shopping, and transportation to providing more hands-on assistance in basic living needs such as grooming, feeding, lifting, or toileting (Gajraj-Singh, 2011) or higher level needs like explaining medical information or managing medication (Alves et al., 2016).

The need for caregivers will continue to increase with the "graying of America" (Kuhn, Hollinger-Smith, Presser, Civian, & Batsch, 2008, p. 5). According to the United States Census Bureau (2010), nearly one in five U.S. residents will be aged 65 or older in 2030. The number of Americans aged 85 years or older will grow to 8.7 million by 2030

and 19 million by 2050. This aging population combined with longer life spans and increasing levels of disease and disability will create a higher demand for increasingly more expensive health care (McLain, 2012). The desire to avoid these higher costs, especially for institutional care, will in many cases shift the caregiving burden to family caregivers (Won, Fitts, Favaro, Olsen, & Phelan, 2008).

### **Family Caregivers as the Hidden Patients**

Though the benefits of family caregiving for care recipients is clear, the effect of caregiving activities on the caregivers themselves is not. Family caregivers are the “hidden patients” (Fengler & Goodrich, 1979, p. 175; Pinquart & Sörensen, 2007, p. 127). Some family caregivers may experience physical, psychological, and social challenges including stress, burnout, fatigue, depression, anxiety, anger, increased susceptibility to health problems, and isolation from personal and social activities (Calhoun, Beckham, & Bosworth, 2002; Gajraj-Singh, 2011; Razani et al., 2014; Samuelsson, Annerstedt, Elmståhl, Samuelsson, & Grafström, 2001). This can create a significant adverse impact on the caregivers’ quality of life and life satisfaction (Gajraj-Singh, 2011). It can also disrupt their life balance when considering other competing demands such as employment, relationships, friendships, financial responsibilities, and security (Alves et al., 2016; Finlayson, Garcia, & Preissner, 2008). One family caregiver described caregiving as “a round-the-clock job” that “you are never free from” (Samuelsson et al., 2001, p. 29).

These negative impacts can be exacerbated when the caregiver has little help or support from other sources. This is especially true when the caregiver is a close family member such as the care recipient’s spouse (Gajraj-Singh, 2011; Savundranayagam, Montgomery, Kosloski, & Little, 2011) or child. A daughter of a care recipient described her experience this way: “During these years I had like a dome over me. I went directly from my work to my mother. I had no weekend to myself. I almost stopped seeing my friends – it was too much for me. My life changed a lot. I became depressed” (Samuelsson et al., 2001, p. 29).

As the caregiving burden increases, it can negatively affect the level of care the caregiver provides (Boise, Congleton, & Shannon, 2005; Pinquart & Sörensen, 2007) and their workplace performance. The Alzheimer’s Association (n.d.) found that among caregivers of those with Alzheimer’s disease, 70% of male and 61% of female workers had to go in late, leave early, or take time off. In addition, 18% of male and 21% of female workers had to take a leave of absence and 10% had to quit work altogether. These types of disruptions and lost productivity cost organizations \$36.5 billion yearly.

### **The Powerful Tools for Caregivers Program as a Psychoeducational Intervention**

This increasing number of aging Americans create a real need to develop “relevant, cost-effective educational programs that can be broadly disseminated” (Boise et al., 2005, p. 574). Interventions such as psychoeducational programs empower caregivers by providing important skill sets and tools (Won et al., 2008). One important factor in these types of interventions is *self-efficacy*—the caregiver’s belief that he or she can create and execute a plan of action to manage a situation. The caregiver’s level of self-efficacy guides his or her behavior and determines how much and how long he or she will put forth effort in a situation. Those with low self-efficacy sometimes focus on deficiencies or difficulties and have little motivation to start or persist in a task. They are susceptible to experiencing depression, anxiety, or anger. Though self-efficacy in caregiving varies amongst tasks and situations, it can help to explain why some caregivers cope better with the caregiving burden compared to others (Steffen, McKibbin, Zeiss, Gallagher-Thompson, & Bandura, 2002).

Powerful Tools for Caregivers (PTC) is one popular psychoeducational intervention based on this self-efficacy model. It was originally developed by researchers at Stanford University using the Chronic Disease Self-Management Program as a foundation. The purpose of the PTC program is to help caregivers develop a set of self-care tools resulting in improved self-efficacy, self-care behaviors, management of emotions, and use of community resources (Powerful Tools for Caregivers, About, 2014a).

Generally, PTC programs offer six weekly classes, each of which runs for 2 ½ hours. Program participants are spouses, partners, adult children of aging parents, siblings, or professional caregivers. Classes are taught by trained class leaders using a standardized curriculum with scripted content and video presentations as well as open discussions, role-playing, and relaxation exercises. Central to the PTC curriculum is the development of action plans, opportunities for practical application, and the sharing of experiences and challenges with others as part of a support system and to improve skill development (Boise et al., 2005; Savundranayagam et al., 2011). Weekly topics include:

- Week 1: Taking Care of You
- Week 2: Identifying and Reducing Personal Stress
- Week 3: Communicating Feelings, Needs, and Concerns
- Week 4: Communicating in Challenging Situations
- Week 5: Learning from Our Emotions
- Week 6: Mastering Caregiving Decisions (Powerful Tools for Caregivers, Class descriptions, 2014b)

The PTC program has been widely adopted and broadly disseminated by over 4,000 trained Class Leaders in the United States, Canada, and Korea (Powerful Tools for Caregivers, About, 2014a). Individual programs are funded through grants, awards, and collaborative ventures with alliances and foundations (Wilder Research, 2013).

### **AN EVALUATION OF the Powerful Tools for Caregivers Program in Boise, Idaho**

In the Boise Idaho area, the Legacy Corps for Veterans and Military Families (Jannus, Inc., 2018) has been offering the PTC program to caregivers for more than a decade. Typical participants of the PTC program (caregivers) are spouses, partners, adult children of aging parents, siblings, and professional caregivers. The Legacy Corps' program has the potential to make positive impacts on various stakeholders including program participants; chronically or terminally ill care recipients; healthcare providers such as physicians, health groups, hospitals, and those concerned with the quality of home-based care that patients are receiving; and organizations who advocate for the support of caregivers such as the Idaho Caregiver Alliance. In addition, the PTC program has garnered a large amount of local community support including the AARP, Boise State University, Western Community Action Partnership, and a number of community centers and churches who have offered their facilities for program activities. This section presents an evaluation study conducted on the Legacy Corps' PTC program offered in Boise, Idaho.

#### **Purpose of the Study**

The PTC program offered by Legacy Corps in Boise, Idaho asks participants (caregivers) to submit a pre-survey, an end-of-program survey, and a 6-month follow-up post-survey to measure program effectiveness. Working with the manager of Legacy Corps, a research team from Boise State University analyzed the existing data obtained from 27 PTC sessions between 2011 and 2017 to evaluate the effectiveness of the PTC program on improving the participants' confidence levels in caregiving.

#### **Survey Instruments and Survey Participants**

Three types of survey questionnaires were administered in print form in the classroom or by mail:

1. Pre-survey. For participants who registered for the program via phone, the Legacy Corps' office mailed a confirmation letter to participants with class location and time as well as a pre-survey questionnaire with a self-addressed stamped envelope.
2. End-of-program survey. An end-of-program survey was administered in the classroom during the last session of the six-week PTC program.
3. Follow-up post-survey. A follow-up post-survey along with a self-addressed stamped envelope was mailed to participants six months after they completed the program.

Of the 338 total caregivers who registered for the PTC program between 2011 and 2017, 277 of them completed the pre-survey, 131 of them completed the end-of-program survey, and 100 of them completed the 6-month follow-up post-survey.

#### **Data Analysis**

Using the collected survey data, the team analyzed demographic information, tested validity and reliability of the survey questionnaires, and analyzed caregivers' confidence levels before, immediately after, and six months after program participation. For statistical analysis, the team used SPSS v. 24.

## **Caregiver Demographics**

**Caregivers' gender and age.** Among the 277 caregivers who submitted their pre-survey data, 256 (92.4%) indicated their gender: 211 (86.3%) females and 35 (13.7%) males. Though the pre-survey did not ask for caregivers' date of birth to determine age, the post-survey included an optional date-of-birth question. Based on 88 caregivers who submitted their date-of-birth, the average age was 61.9 (SD = 11.8).

**Caregivers' health.** A majority of caregivers (80.5%) rated their own health as healthy (mean = 3.38 on a 5-point scale where 1 = *Poor* and 5 = *Excellent*) specifically indicating it as *Good* (n = 100 or 36.6%), *Very good* (n = 89 or 32.6%), or *Excellent* (n = 34 or 12.5%).

**Caregivers' employment status.** One-third of the caregivers worked full-time (n = 62 or 22.5%) or part-time (n = 31 or 11.3%). The remaining two-thirds were not employed (n = 58 or 21.1%) or retired (n = 121 or 44.0%).

**For whom they are caring.** More than one-third of the caregivers indicated they were caring for their parent (n = 111 or 40.7%) and another one-third caring for their spouse/partner (n = 95 or 34.8%). Other participants indicated they were taking care of their adult child (n = 12 or 4.4%), an in-law (n = 7 or 2.6%), or a friend (n = 6 or 2.2%). The research team grouped the care recipient's health conditions into five categories—cognitive, mental, physical, social, and other. Caregivers often identified multiple diagnoses (up to three) for the care recipients (e.g., dementia, Parkinson's, and stroke) and those usually fell into multiple corresponding categories (e.g., cognitive and physical). Table 1 shows the number of times and percentages each category was mentioned. Cognitive and physical conditions were the most frequently mentioned reasons for caregiving.

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**Where they are providing care.** Most caregivers were providing care in their own home (n = 126 or 47.2%) or a parent's home (n = 100 or 37.5%).

**Caregivers' use of community resources.** About two-thirds of the participants (n = 185 or 69.3%) had not used any community resources to help themselves in the caregiver role prior to attending this program. Those who had used community resources mentioned using programs such as Friends in Action, Family Caregiver Conference, and Alzheimer's or Parkinson's support groups.

## **Validity and Reliability of the Survey Instruments**

The pre- and 6-month follow-up post-survey questionnaires contained seven questions asking caregivers to rate their confidence levels in the following seven aspects using a partially-labeled 5-point scale (1: *Not at all confident*, 2: without a label, 3: *Somewhat confidence*, 4: without a label, and 5: *Very confident*):

- C1. Take better care of myself
- C2. Set goals and solve problems
- C3. Improve my communication skills
- C4. Cope with emotions associated with caregiving
- C5. Make tough decisions
- C6. Use stress-reducing activities
- C7. Have a positive attitude

Using the pre-survey data, the team performed factor analysis and reliability testing on the seven questions. The team found that these questions measured a *single* factor, which can be named "caregiver confidence" [KMO = .890,  $\chi^2(21) = 945.57$ ,  $p < .000$ ; factor loadings were: C1 = .701, C2 = .837, C3 = .676, C4 = .725, C5 = .683, C6 = .784, C7 = .760]. See the scree plot in Figure 1. This single factor accounted for 61.1% of the total variance. In the social sciences, 60% or above is considered satisfactory (Hair, Black, Babin, & Anderson, 2010, p. 109). The team also found that the

seven questions measured caregiver confidence *reliably* (Cronbach's Alpha = .893) and that all seven questions contributed to the measurement (see Table 2). The team then proceeded with the next step of analyzing the program's effectiveness on changing caregivers' confidence levels.

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### **Caregivers' Confidence Before, Immediately After, and 6 Months After Program**

The pre-survey and the 6-month follow-up post-survey measured caregivers' confidence levels using seven questions and a 5-point response scale. The end-of-program survey, on the other hand, asked caregivers to select three of the seven areas where they felt more confident as a result of completing the PTC program.

**Caregivers' confidence at the end of the program.** A total of 131 caregivers submitted the end-of-program survey. They indicated the quality of the program and class leaders was *Excellent* ( $M = 9.49$ ,  $SD = .82$ , and  $M = 9.69$ ,  $SD = .68$ , respectively, on a 10-point scale where 1 is *Poor* and 10 is *Excellent*). More importantly, all of the caregivers felt that they had become a *more confident* caregiver when compared to their feelings before participating in the program. Specifically, caregivers selected "C1. Taking better care of themselves" and "C3. Improving communication skills" most frequently as their improvements (see the rank-ordered items below):

- C1. Take better care of themselves (frequency = 99)
- C3. Improve their communication skills (frequency = 97)
- C4. Cope with their emotions associated with caregiving (frequency = 71)
- C6. Manage stress better by using stress-reducing tools (frequency = 70)
- C7. Understood the importance of having a positive attitude (frequency = 52)
- C2. Their ability to set goals and solve problems (frequency = 47)
- C5. Their ability to make tough decisions (frequency = 34)

**Changes in caregivers' confidence 6 months after the program.** Between 277 pre-survey data and 100 6-month follow-up post-survey data, the team matched 81 sets of data by caregivers' names. Among them, five sets contained some missing data, leaving 76 complete sets of pre- and 6-month follow-up post-survey data (i.e., 27.4% of the pre-survey data). The pre- and follow-up post-survey scores' skewness values were between -1 and 1.

The team performed a paired samples *t*-test on caregivers' overall confidence levels using the average scores of the seven questions. The caregivers' overall confidence levels improved from an average score of 3.67 before to 3.97 six months after the program. Though this increase of .30 points may seem small, the *t*-test revealed that it was a statistically significant increase [ $t(75) = -3.973$ ,  $p < .001$ ], and its effect size (practical significance) was medium (Cohen's  $d = .45$ ).

The team conducted additional paired samples *t*-tests on each of the seven questions to compare the changes in caregivers' confidence in individual aspects of caregiving (see Figure 2 and Table 3):

- C1. Take better care of myself (pre-M = 3.89, 6-month-post-M = 4.05,  $p = .109$ )
- C3. Improve my communication skills (pre-M = 3.86, 6-month-post-M = 4.03,  $p = .138$ )
- C7. Have a positive attitude (pre-M = 3.76, 6-month-post-M = 4.01,  $p = .024$ )
- C2. Set goals and solve problems (pre-M = 3.89, 6-month-post-M = 4.13,  $p = .013$ )
- C5. Make tough decisions (pre-M = 3.62, 6-month-post-M = 4.09,  $p < .001$ )

- C6. Use stress-reducing activities (pre-M = 3.39, 6-month-post-M = 3.77,  $p = .0066$ )
- C4. Cope with emotions (pre-M = 3.28, 6-month-post-M = 3.72,  $p < .001$ )

C7 and C2 showed a statistically significant improvement at the .05 level, but their effect sizes were small ( $d = .27$  and  $.30$ , respectively). The highest 6-month post-confidence level was in “C2. Set goals and solve problems” (6-month-post-M = 4.13), but its pre-survey score was also fairly high (pre-M = 3.89).

More notable results were found in C5, C6, and C4, which revealed a significant improvement at the .007 level using a more rigorous *Bonferroni correction* method (Field, 2009). Caregivers showed the greatest improvement in their confidence in “C5. Make tough decisions” ( $p < .001$ ), followed by “C4. Cope with emotions” ( $p < .001$ ), both of which had medium effect sizes ( $d = .53$  and  $.54$ , respectively). Family caregivers often face situations in which they have to make difficult decisions potentially increasing their emotional burden while providing long-term care. Thus, these improvements in confidence as a result of PTC program participation are particularly important considering the fact that these program benefits were able to be sustained six months after the program.

Caregivers also significantly improved their confidence in “C6. Use stress-reducing activities” ( $p < .007$ ), but its effect size was small ( $d = .33$ ). Another important finding was that the 6-month follow-up post-survey confidence levels in C6 and C4 (3.77 and 3.72, respectively) were significantly lower than those in the other five areas (C1 = 4.05, C3 = 4.03, C7 = 4.01, C2 = 4.13, and C5 = 4.09). These results seem to indicate that reducing stress (C6) and coping with emotions associated with caregiving (C4) may be some of the most challenging aspects of caregiving.

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### **Conclusion of the Study**

Analysis of the survey data collected between 2011 and 2017 revealed that the Legacy Corps’ PTC program in Boise, Idaho is a valuable program for improving and sustaining caregivers’ confidence in caregiving. This program has been particularly useful in improving caregivers’ confidence in making tough decisions and coping with their emotions during the caregiving process. Program participation has also helped to improve their confidence in setting goals and solving problems, using stress-reducing activities, and handling issues with a positive attitude. It is, however, evident that some caregivers find difficulty in coping with their stress and emotions associated with caregiving. Therefore, the research team recommended that the Legacy Corps’ PTC program be amended to enhance stress-reducing activities and coping strategies.

### **Discussion**

A number of studies have focused on evaluating the effectiveness of PTC programs in recent years (Boise et al., 2005; Kuhn et al., 2008; McLain, 2012; Oken et al., 2010; Rosenberg, Jullamate, & Tungthongchai, 2015; Rosney, Noe, & Horvath, 2017; Savundranayagam et al., 2011; Serwe, Hersch, & Pancheri, 2017; Won et al., 2008). The present study adds new information to this existing body of knowledge about PTC program effectiveness.

### **Measuring PTC’s Long-Term Impact**

PTC studies often compare survey data before and immediately after the program, but seldom measure the program’s long-term impact by following up with the participants several months later. Among PTC research articles found in the literature (Table 4), the present study is one of few comparing pre- and 6-month follow-up post-survey results. Adding to the existing knowledge that participation in PTC programs are generally effective in improving caregivers’ self-efficacy, the present study shows that the PTC program also produces a long-term impact on supporting caregiver confidence. Since family caregiving often involves long-term care, it is particularly important that more research is conducted to investigate the long-term effectiveness of caregiver education programs.

However, one of the difficulties in assessing the long-term impact of programs lies in low survey return rates. For example, in a PTC study by Boise et al. (2005), the researchers evaluated 33 PTC classes using pre- and post-program surveys immediately following program completion as well as 6 months afterwards. Out of 257 participants, they obtained 69 paired data from the pre- and 6-month follow-up surveys (a 26.9% response rate). In another PTC study by Kuhn et al. (2008), 49 out of 155 participants completed their 6-month post-program survey (a 31.6% response rate). The response rates in these two studies are similar to the 27.4% response rate experienced in the present study. This is a common limitation of long-term impact studies. Therefore, consumers of PTC research should be cautioned that the long-term implications of individual studies suffering from low survey return rates may have limited generalization. In future efforts, using telephone surveys instead of mailed surveys although resource-intensive may help to increase survey response rates.

Another limitation of the present study is that it was conducted using a self-selected sample (program participants) without a comparison group limiting generalization of the results. In fact, only a couple of PTC studies used a randomized control trial (RCT) method (e.g., Oken et al., 2010; Rosenberg et al., 2015) and another study used a quasi-experimental design (Savundranayagam et al., 2011). Though a lot of value can be found in studies conducted in natural settings, consumers of this type of PTC research must synthesize and select implications of individual studies that are applicable to their own settings.

### **Improving Accessibility for Participants**

It is recommended that readers reflect on several other issues while synthesizing research findings on PTC program effectiveness. First, PTC programs may experience some early participant dropouts. Reasons for program dropouts include caregivers' lack of time (Kuhn et al., 2008) or declining health of the caregiver or care-recipient (Savundranayagam et al., 2011). This implies that participation in the program itself can be a source of additional burden to some caregivers.

For caregivers who might find it difficult to attend a PTC program, an online version of the program may serve as a feasible alternative. For example, Serwe et al. (2017) evaluated the effectiveness of providing six 90-minute PTC sessions and related content via synchronous teleconferencing for four participants in southeastern Wisconsin. Though this was helpful for some, one participant still had to miss two of the six teleconferencing sessions due to conflicts with her work schedule. Furthermore, online programs contain unique challenges not found in in-person programs such as technology-related usability issues. Participants in Serwe et al.'s study (2017) reported a relatively high usability/technological effectiveness of the online program; however, they also indicated several technological barriers such as the inability to hear others clearly, inability to troubleshoot errors, and quality concerns with the loss of in-person meetings.

### **Designing for Individual Participants**

Caregivers' characteristics may also influence the PTC program effectiveness. There is no one-size-fits-all approach that meets the "diverse array of needs" of all caregivers (Finlayson et al., 2008; Rosney et al., 2017, p. 195). However, identifying individual participant characteristics and using evidence-based decisions to achieve desired program outcomes are key to the PTC program design and development process.

For example, a study by Won et al. (2008) showed that the caregivers' college education level was associated with greater improvements in psychological well-being as a result of participation (an important PTC program outcome). However, caregivers who live with their care recipient experienced less improvement in psychological well-being as a result of participation. Furthermore, caregivers' age (younger or older than 65) was not a substantial determinant of program effectiveness.

Another individual characteristic that can greatly affect PTC program outcomes is culture. Culture includes different languages as well as different beliefs and values. For example, in the Hmong language, there is no direct translation of the word "caregiver." In addition, Hmong Americans as a whole find it culturally inappropriate to learn in a group setting or participate in role-play activities limiting the effectiveness of the standard PTC program curriculum (Wilder Research, 2013). Careful assessment of individual caregiver characteristics including culture can enable PTC programs to make appropriate adjustments to standardized curriculums maximizing program effectiveness.



## Conclusion

The present study has revealed that the PTC program in Boise, Idaho is effective in helping caregivers improve their confidence in caregiving especially in making tough decisions, coping with emotions, and using stress-reducing activities. Despite these significant improvements, many caregivers still struggle with finding ways to reduce stress and manage their emotions associated with caregiving as shown by the lowest pre- and 6-month follow-up post-survey scores. The present study is one of few comparing pre- and 6-month follow-up post-survey results. Traditional methods of PTC program research and evaluation often look at the short-term benefits of standardized programs and include a number of limitations such as low survey return rates and research designs that limit generalizability. Reflecting on this existing research, PTC program designers and administrators should explore beyond the one-size-fits-all curriculum to meet the needs of local caregivers. They must also find ways to reach out to caregivers who find it difficult to attend traditional in-person programs. By improving PTC program design and measuring its long-term effectiveness, PTCs can have an even greater and lasting impact on helping caregivers.

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Table 1.

Types of Care Recipients' Health Conditions

Category	Condition	Frequency	Percentage
Cognitive	dementia, Alzheimer's, memory loss, etc.	130	35.5%
Physical	stroke-caused immobility, Parkinson's, blindness, etc.	171	46.7%
Mental	depression, autism, bipolar disorder, etc.	17	4.6%
Social	avoidance of social gatherings, etc.	3	0.8%
Other	too generic or non-specific descriptions	29	7.9%
Missing data	-	16	4.4%
	<b>Total</b>	<b>366</b>	<b>100%</b>

Table 2.

Results of Factor Analysis and Reliability Testing on Survey Items that Measured Caregiver Confidence

Confidence Question Item	Mean	SD	N (Listwise)	Factor Loading	Cronbach's Alpha if Item Deleted
C1. Take better care of myself	3.87	.91	265	.701	.881
C2. Set goals and solve problems	3.88	.93	265	.837	.867
C3. Improve my communication skills	3.86	.88	265	.676	.884
C4. Cope with emotions	3.26	.92	265	.725	.878
C5. Make tough decisions	3.58	.99	265	.683	.883
C6. Use stress-reducing activities	3.52	1.04	265	.784	.872
C7. Have a positive attitude	3.71	.99	265	.760	.874

Table 3.

Paired Samples T-Test Results

Confidence Area		N (Listwise)	Mean	Mean Diff.	SD	<i>t</i>	df	<i>p</i>	Effect Size <i>d</i>
Overall caregiver confidence	Pre	76	3.67	.30	.65	-3.973	75	.000*	.45
	6-Month Post	76	3.97						
C1 Take better care of myself	Pre	76	3.89	.16	.81	-1.624	75	.109	.19
	6-Month Post	76	4.05						
C3 Improve my communication skills	Pre	76	3.86	.17	.99	-1.498	75	.138	.17
	6-Month Post	76	4.03						
C7 Have a positive attitude	Pre	76	3.76	.25	.96	-2.311	75	.024*	.27
	6-Month Post	76	4.01						
C2 Set goals and solve problems	Pre	76	3.89	.24	.83	-2.555	75	.013*	.30
	6-Month Post	76	4.13						
C5 Make tough decisions	Pre	76	3.62	.47	.87	-4.644	75	.000**	.53
	6-Month Post	76	4.09						
C6 Use stress- reducing activities	Pre	76	3.39	.38	1.17	-2.796	75	.007**	.33
	6-Month Post	76	3.77						
C4 Cope with emotions	Pre	76	3.28	.44	.09	-4.684	75	.000**	.54
	6-Month Post	76	3.72						

\* Significant at a .05 level.

\*\* Significant at a .007 level, using Bonferroni correction.

Table 4.

A Summary of Published PTC Studies

#	Author (Year), Study Location and Timeframe of Data Collection	Research Design, Sample Type, and Statistical Analysis Used	Instruments Used and Size of Data Analyzed	Main Findings
1.	Boise et al. (2005) Oregon, U.S. 2002	Pre-post-follow-up design Self-selected program participants as a sample Paired samples <i>t</i> -test	Survey questionnaires <ul style="list-style-type: none"><li>• Pre (n = 226)</li><li>• Post (n = 204)</li><li>• Paired pre- and post (n = 186)</li><li>• 6-month follow-up (n = 69)</li></ul>	PTC significantly improved caregivers' emotional well-being, self-care behaviors, self-efficacy, and knowledge/use of community resources both post- and 6-month follow-up PTC program completion.
2.	Present study (2018) Idaho, U.S. 2011–2017	Pre-post-follow-up design Self-selected program participants as a sample Paired samples <i>t</i> -test	Survey questionnaires <ul style="list-style-type: none"><li>• Pre (n = 277)</li><li>• Post (n = 131)</li><li>• 6-month follow-up (n = 100)</li><li>• Paired pre- and 6-month follow-up (n = 76)</li></ul>	PTC significantly improved caregivers' confidence levels including making tough decisions, improving setting goals and problem solving, using stress reducing activities, and management of emotions.
3.	Kuhn et al. (2008) An online version (PTC Online) was developed in Evanston, Illinois in 2004 and delivered online to employees of the three sponsoring companies whose locations and participation timeframe were not reported.	Pre-post-follow-up design Self-selected program participants as a sample Repeated measures ANOVA	Survey questionnaires <ul style="list-style-type: none"><li>• Pre (n = 155)</li><li>• Post (n = 49)</li><li>• 6-month follow-up (n = 49)</li></ul>	PTC Online significantly improved caregivers' involvement in exercise and relaxation activities, resilience, self-efficacy, overall feelings about caregiving, and caregiver competencies. Post program, caregivers indicated participation decreased their job stress and burnout.
4.	McLain (2012) Wisconsin, U.S. 2000–2009	Pre-post design Self-selected program participants as a sample Paired samples <i>t</i> -test ANOVA	Survey questionnaires Random sample of 368 from 715 subjects who met the study criteria: <ul style="list-style-type: none"><li>• Pre (n = 368)</li><li>• Post (n = 368)</li></ul>	PTC significantly improved caregivers' self-efficacy, self-care, management of emotion, and help/resource use post PTC program completion. Younger caregivers (45 – 64 yrs. old) and females were found to benefit more from PTC. Those with higher levels of education (high school and/or some college) were found to improve their management of emotions through PTC program participation.

5.	<p>Oken et al. (2010)</p> <p>Oregon, U.S.</p> <p>Timeframe of data collection was not reported.</p>	<p>Pilot randomized control trial with pre-post design</p> <p>Random assignment of research participants to three conditions</p> <p>ANCOVA (age = covariate)</p>	<p>Survey questionnaires</p> <p>Cognitive assessments</p> <p>Salivary cortisol measurements</p> <p>Diary logbook (mediation group)</p> <p>Pre-post measures:</p> <ul style="list-style-type: none"> <li>• Meditation (n = 10)</li> <li>• PTC education (n = 11)</li> <li>• Respite-only (n = 10)</li> </ul>	<p>Both active interventions (meditation and PTC education) significantly reduced perceived stress among dementia caregivers.</p>
6.	<p>Rosenberg et al. (2015)</p> <p>Thailand</p> <p>Timeframe of data collection was not reported.</p>	<p>Randomized control trial with pre-post design (only the experimental group completed the pre-test)</p> <p>Random selection of research participants and random assignment to two conditions</p> <p>Paired samples <i>t</i>-test to compare the experimental group's pre- and post-test scores</p> <p>Another <i>t</i>-test to compare experimental and control groups' posttest scores</p>	<p>Stress and well-being assessments</p> <p>Pre-post measures:</p> <ul style="list-style-type: none"> <li>• Experimental group with PTC (n = 50)</li> <li>• Control group without PTC (n = 50)</li> </ul>	<p>PTC significantly decreased caregivers' stress levels and increased their subjective well-being.</p>
7.	<p>Rosney et al. (2017)</p> <p>New York, U.S.</p> <p>June, 2004–October, 2013</p>	<p>Pre-post design</p> <p>Self-selected program participants as a sample</p> <p>Paired samples <i>t</i>-test</p>	<p>Survey questionnaires</p> <p>Of 1,038 participants, 409 completed both surveys:</p> <ul style="list-style-type: none"> <li>• Pre (n = 409)</li> <li>• Post (n = 409)</li> </ul>	<p>PTC significantly improved caregivers' self-care behaviors, confidence in caregiving (self-efficacy), management of emotions, and knowledge/use of community resources.</p>

8.	Savundranayagam & Brintnall-Peterson (2010) Wisconsin, U.S. 2001–2004	Pre-post design Self-selected program participants as a sample Repeated measures ANOVA and MANOVA Multiple hierarchical regression	Survey questionnaires <ul style="list-style-type: none"><li>• Pre (n = 325)</li><li>• Post (n = 325)</li></ul>	PTC significantly decreased caregivers' health risk behaviors and improved their self-efficacy as well as self-care activities such as relaxation, exercise, and stress management techniques.
9.	Savundranayagam et al. (2011) California, Illinois, Iowa, Montana, North Carolina, Oregon, Washington, Wisconsin, U.S. April, 2007–December, 2008	Pre-post quasi-experimental design Self-selected program participants as a sample Structural equation modeling	Survey questionnaires <ul style="list-style-type: none"><li>• Experimental group with PTC (n = 115)</li><li>• Comparison group without PTC (n = 95)</li></ul>	PTC significantly decreased levels of burden associated with the caregiver role including anxiety, depression, and feelings of having little time or privacy for other aspects of their lives.
10.	Serwe et al. (2017) Southeastern Wisconsin, U.S. A telehealth version of the PTC was developed for synchronous video-conferencing delivery whose locations and participation timeframe were not reported.	Pre-post design Self-selected program participants as a sample Descriptive statistics	Survey questionnaires <ul style="list-style-type: none"><li>• Pre (n = 4)</li><li>• Post (n = 4)</li></ul>	PTC program presentation via telehealth synchronous delivery was feasible and caregivers viewed the synchronous delivery format favorably including usefulness, ease of use, and satisfaction.
11.	Won et al. (2008) Western Washington (Puget Sound region), U.S. July, 2001–June, 2004	Pre-post design Self-selected program participants as a sample Wilcoxon Signed Rank test McNemar's test Mann-Whitney U-test Multivariate linear regression	Survey questionnaires Of 208 participants, 118 completed both surveys: <ul style="list-style-type: none"><li>• Pre (n = 118)</li><li>• Post (n = 118)</li></ul>	PTC significantly improved caregivers' self-care behaviors (exercise) and psychological well-being as well as reduced health-risk behaviors. This was especially true for younger (less than 65 years old) and college educated caregivers as well as those who provided caregiving for recipients with fewer health conditions.

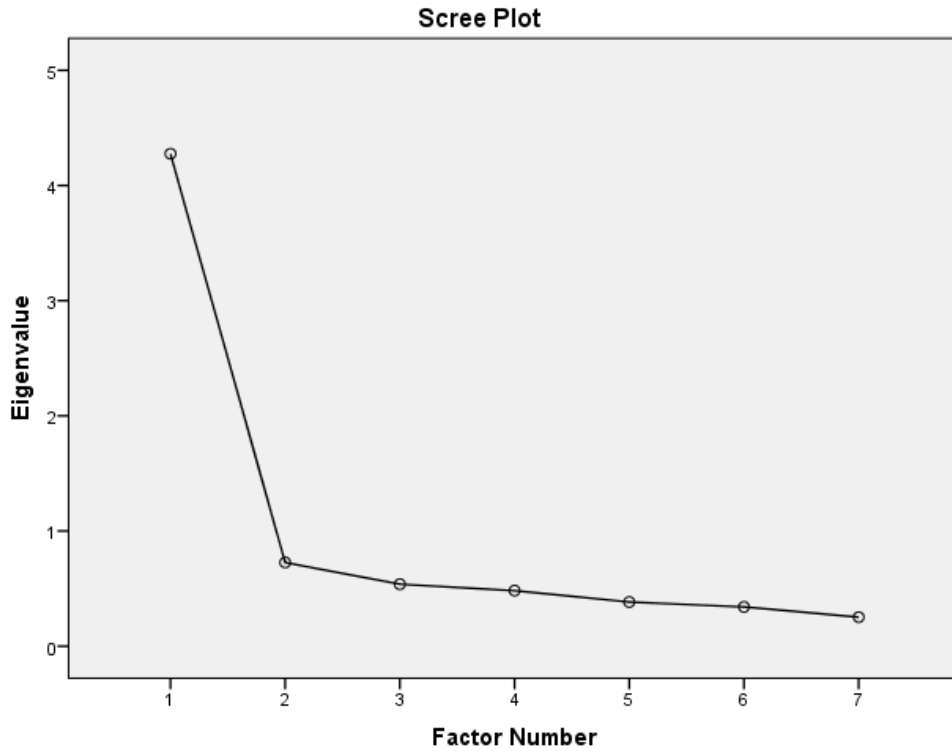


Figure 1. A scree plot.

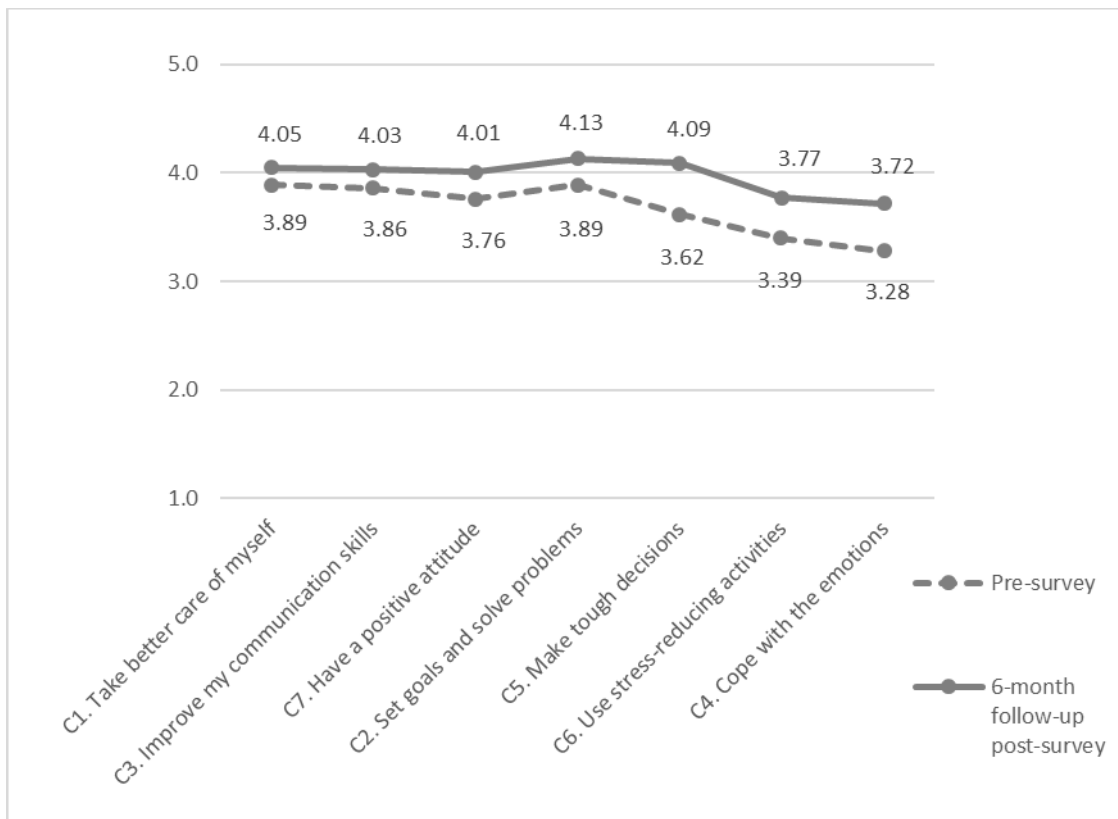


Figure 2. Line graphs comparing pre- and 6-month follow-up post-survey results.