

## AN ABSTRACT OF THE DISSERTATION OF

Hye Soo Lee for the degree of Doctor of Philosophy in Human Development and Family Studies  
presented on June 9, 2022.

Title: Social Support and Optimal Aging during the Covid-19 Pandemic.

Abstract approved: \_\_\_\_\_

Carolyn M. Aldwin

The COVID-19 pandemic was thought to be especially difficult for older adults, with high risks for social isolation due to the lockdowns necessitated by the pandemic. This study sought to understand the extent to which these community-residing older adults were receiving and providing social support. Further, we sought to disentangle the associations between multiple facets of social support and optimal aging under the influence of a shared stressor, the COVID-19 pandemic. The multiple facets of social support under examination include directionality (received vs. provided), type of support (emotional vs. instrumental), sources and recipients of support (family and friends), social support satisfaction, and specific kinds of support (e.g.,

domestic tasks). We specifically focused on providing social support as a productive activity that is associated with optimal aging.

We examined each facet of social support and its relationships to optimal aging, in terms of physical, cognitive, and psychological functioning, as well as the ability to find positive outcomes in a stressful situation. Following the optimal aging framework which specifies that optimal aging consists of good functioning within current limitations (Aldwin & Igarashi, 2016), this study included the number of chronic illnesses as current limitations of older participants. Thus, we investigated whether aging and social support facets are significantly associated with optimal aging, focusing on optimal functioning, controlling for current limitations. Thus, this study is test of one component of optimal aging framework.

We based our hypotheses on esteem-enhancement theory and socioemotional selectivity theory. The former posits that providing social support is more beneficial than receiving social support; the latter assumes that in later life, the quality of friend relationships varies less than family relationships. We also took into consideration previous study results regarding positive effects of receiving emotional support. Consequently, we hypothesized that, in general, social support would have negative associations with negative health outcomes, with the exception of receiving instrumental support from family, which would have positive association with negative health outcomes. As qualitative/mixed-method research questions were primarily exploratory, there were no specific hypotheses.

Participants were recruited from LIFE (Linking Individuals, Families, and Environments) Registry of the Center for Healthy Aging Research at Oregon State University. This consisted of Oregonians of age 50 or older who were interested in aging research. Data were collected from April 2020 to June 2020, with one baseline survey and seven weekly follow-ups. This study

utilized the baseline quantitative and qualitative data. Of the 254 respondents who submitted the first survey, 238 participants ( $M = 71.20$ ,  $SD = 7.32$ , age range = 51-95) provided sufficient data for baseline quantitative analyses. The baseline sample was 73.11% female, 96.55% White, and was highly educated, with 45.79% having a post-graduate degree.

For the baseline qualitative data, 228 participants contributed at least one response to the four open-ended questions regarding social support activities. This sample was similar to the quantitative sample, 74.56% female, 97.29% White, and with 46.05% having a post-graduate degree. Additionally, pre-coded data from the same dataset will be used as well, regarding positive outcomes from the COVID-19 pandemic (Igarashi et al., 2021). For the open-ended question concerning positive outcomes, 148 participants submitted a response. Their age ranging from 51 to 95 ( $M = 71.4$ ,  $SD = 7.4$ ), they were largely female (73.6%) and White (92.1%), with nearly half of the sample (47%) having a post-graduate degree.

All quantitative analyses were conducted using SAS OnDemand Academics (SAS Institute Inc., Cary, NC, USA). Descriptive analyses were performed to examine and compare participants' received and provided support by types of support and sources and recipients of support. Depressive symptoms, cognitive lapses, and physical symptoms were used to define optimal aging as a latent variable. Then, four sets of structural equation modeling analyses were conducted to investigate the relationships between social support and health outcomes, given the effects of age and the number of chronic illnesses.

Participants reported receiving and providing more emotional support than instrumental support. They also reported that they provided more emotional support than they received to their family, implying an imbalance in support, but it was family members that they received and provided more instrumental support with than with friends. Participants were more satisfied with

the support they received than provided, and the satisfaction was higher for received instrumental support than received emotional support.

Regarding zero-order relations among variables of interest, age and education did not have any significant relationships with other variables, which was surprising. Marital status had positive relationships with family social support. The number of chronic illnesses was only correlated with physical symptoms. Being a female showed significant correlations with received and provided emotional support with friends, but not with family.

The final analyses for the quantitative research questions produced interesting results: the mere act of receiving or providing support, whether emotional or instrumental, or whether it was family support or friend support, was not important concerning health outcomes. Rather, it was the satisfaction of social support, both received and provided and both emotional and instrumental, that was imperative in relation to health outcomes. However, the fact that not only satisfaction with received support, but also satisfaction with provided support was important for health outcomes supported our hypotheses that providing social support would be important for older adults' well-being.

As for the qualitative/mixed-method analyses, data were managed using ATLAS.ti version 22 (ATLAS.ti Scientific Software Development GmbH, Berlin, Germany). Content analysis was employed and open coding was conducted by two doctoral candidates, as well as two senior researchers. Open codes were grouped into preliminary consolidated codes by the author. These preliminary codes were then discussed and consolidated into final codes. After reaching a .70 criterion for intercoder agreement, we discussed all disagreements into resolution and obtained final coded data. Specific social support activities were compared by age groups, the middle-aged, the young-old, and the old-old, and by gender. Then the pre-coded data from a

published study was used to explore the relationships between received and provided social support and positive outcomes from the COVID-19 experience.

Most participants reported receiving or providing some sort of social support, indicating that our sample was well-integrated into their social network. For emotional support, we identified 10 activity codes for received support and eight codes for provided support. Most of the codes were identical (e.g., *interpersonal responses to distress*, *promoting social ties through positive interactions*, and *reciprocal support*), but received support had two additional codes pertaining to pet support and professional support. There were nine codes for both received and provided instrumental support, all codes identical (e.g., *domestic tasks*, *gifts*, and *offers of support*). It is noteworthy that whereas some support was COVID-19-specific, such as helping with emotional distress that COVID-19 brought about, others were not, instead including activities such as lending a hand for mundane domestic tasks or just socializing. However, these everyday activities, taking place in the absence of explicit distress, may have played an important role in maintaining stable relationships with others. Also, many support activities that participants answered as received support or provided support were reciprocal in nature.

There were significant age differences for emotional support. The middle-aged participants were most likely to report *responses to distress* in received support, followed by the young-old and old-old. The middle-aged group were also more likely to *promote social ties through positive interactions* in provided support, followed by the old-old and the young-old. There were no age differences shown for instrumental support, which was surprising. Gender differences did not appear for received emotional support, but appeared in the code *interpersonal responses to distress* for provided emotional support, being marginal in significance and in the favor of females. While there were no gender differences in received instrumental support, the

provided instrumental support codes *domestic tasks* and *gifts* showed differences, the former being marginal in significance and in favor of males. Females' responses were coded more as *gifts*.

The associations with positive outcomes from COVID-19 were investigated with a hierarchical regression analysis. This analysis included received and provided emotional/instrumental support from the quantitative data, representing the variety of social support network, and also their counterparts in the qualitative data, representing the variety of social support activities coded. None of the social support network variety variables showed significant associations with positive outcomes. However, qualitative data did: received emotional support had a marginally significant positive association, and providing instrumental support had a significant positive association with positive outcomes. Thus, we concluded that both receiving emotional support and providing instrumental support are associated with being able to perceive more positives in stressful situations.

This study offered evidence that older adults received and provide social support from and to others even in the midst of the COVID-19 pandemic, and that most of these community-residing residents were not socially isolated, despite being in lockdown. In doing so, this study identified providing social support as a productive activity that could benefit both older adults and society as a whole. This argues against the ageist notion that older adults are merely a vulnerable population in need, which was especially prevalent in the early period of COVID-19. The COVID-19 context allowed for controlling for the stressor in studying various facets of social support and their associations with optimal aging, specifically focusing on functioning and meaning in life. The insights obtained from this study will contribute to future research in further disentangling the complex associations between social support and well-being.

©Copyright by Hye Soo Lee

June 9, 2022

All Rights Reserved.

Social Support and Optimal Aging during the Covid-19 Pandemic

by

Hye Soo Lee

A DISSERTATION

submitted to

Oregon State University

in partial fulfillment of

the requirements for the

degree of

Doctor of Philosophy

Presented June 9, 2022

Commencement June 2023



Doctor of Philosophy dissertation of Hye Soo Lee presented on June 9, 2022

APPROVED:

---

Major Professor, representing Human Development and Family Studies

---

Head of the School of Social and Behavioral Health Sciences

---

Dean of the Graduate School

I understand that my dissertation will become part of the permanent collection of Oregon State University libraries. My signature below authorizes release of my dissertation to any reader upon request.

---

Hye Soo Lee, Author

## ACKNOWLEDGEMENTS

First, I would like to acknowledge Dr. Carolyn Aldwin for all her effort, tolerance, graciousness, and red letters as I learned and re-learned many things under her fluffy wings. I knew I did not have to impress her, and I knew it was safe to make mistakes in front of her. She would just smile and red-letter them. Without her assistance and encouragement for me at every step, this dissertation just would not have been possible. Please let me promise her here many boxes of cookies (that she will share with Rick), flowers (that Bertie can bark at), and tea from Korea (that she will store in her kitchen shelf and may or may not drink) in coming 50 years that I will hopefully spend as a researcher.

My gratitude also goes to Dr. Karen Hooker: I will always remember her kindness and support when I returned to school, and her sharp questions about theoretical weaknesses in my works that I really did have to think about. I also wish that sightings of Sasquatch (have you noticed that Sasquatch contains the word SAS in it?) will continue in Oregon – even though Dr. Rob Stawski is now far away (who still graciously answered every elementary statistics question I had). I would like to admit to Dr. David Rothwell that I still look up macro, cross-national indices: I have not given up my dream to study inter-country differences, which you helped me develop. I cannot thank Dr. Jennifer Beamer more for being always there!

Special thanks to everyone in the Optimal Aging Lab, you were all very kind to me even before I joined your lab. I still remember meeting Dr. Soyoung Choun for the first time in her office. She was the backbone of the support every Korean graduate student got here, and that, of course, includes me. I send my gratitude to Dr. Heidi Igarashi for all her support, emotional, instrumental, and informational, as I gingerly played with the qualitative data. Professor

Hyunyup Lee, if anyone has the superpower to be nice to people, he had it and he has it. It was an honor to be in the same cohort as he was. Maria Kurth, also known as Master Kurth (just a step away from Ph.D!), always helped me stay sane. She also spent hours working on coding the data for this dissertation, and should receive not mere credit, but something more substantial from me. Let me also offer my gratitude to Professor Sungrok Kang, Dr. Ritwik Nath, Dylan Lee, and Austin Brockmann. I hope they are all doing well.

I also want to use this opportunity to thank those who helped me come here and persevere here. I have Dr. Rick Settersten to thank for, he brought me to this program and took care of me for the first few years. Dr. Bridget Hatfield always made me feel welcome every time I encountered her in the Waldo Hall. Dr. John Geldhof was responsible, I believe, for signing numerous documents pertaining to me that needed signing, and I did not have the chance to thank him properly. I am also thankful that it was Dr. Monica Olvera that I assisted in teaching in my last year in the program: she understood what it was like to be a graduate student finishing up her studies.

There was a time when I thought Ms. Kaycee Headley had all answers in life. She did, 95% of the time, and directed me to other resources for the rest 5%. Then, it was Ms. Megan Ferris who patiently provided all answers for me and additionally asked me if I needed anything in every email. I cannot thank her enough for her kindness.

## TABLE OF CONTENTS

	<u>Page</u>
Introduction.....	1
Social Support as a Productive Activity.....	5
Social Support and Optimal Aging.....	6
COVID-19 and Older Adults' Social Support.....	9
Present Study.....	10
Literature Review.....	13
Definition of Terms.....	14
Successful Aging, Optimal Aging, and Social Support as a Productive Activity.....	15
Theoretical Foundations of the Relationship between Social Support and Well-being...	19
Social Support and Depressive Symptoms.....	23
Provided Support, Received Support, and Depressive Symptoms.....	24
Summary.....	27
Sources and Recipients of Support.....	28
Summary.....	31
Types of Support.....	31
Emotional Support.....	31
Instrumental Support.....	32
Summary.....	33
Social Network Size and Social Support Satisfaction.....	34
Summary.....	36

## TABLE OF CONTENTS (Continued)

Social Support and Physical Health.....	37
Summary.....	38
Social Support and Cognitive Functioning.....	39
Summary.....	42
Social Support and Meaning.....	42
Summary.....	44
Age and Social Support.....	44
Summary.....	46
COVID-19 and Older Adults' Social Support.....	46
Summary.....	49
Summary.....	49
Present Study.....	50
Aging, Social Support and Health Outcomes.....	51
Social Support and Positive Outcomes of COVID Stress.....	56
Methods.....	63
Sample and Procedure.....	63
Measures.....	64
Demographics.....	64
Chronic Illnesses.....	65
Social Support Network Variety and Social Support Satisfaction.....	65
Outcome Variables.....	66

## TABLE OF CONTENTS (Continued)

Measurement Model.....	68
Sample Characteristics.....	69
Analyses.....	70
Aging, Social Support and Health Outcomes.....	70
Social Support and Positive Outcomes of COVID Stress.....	73
Results.....	84
Aging, Social Support, and Health Outcomes.....	84
Research Question #1: Demographic Characteristics, Social Support, and Health Outcomes.....	84
Research Question #2: Social Support and Health Outcomes.....	87
Qualitative Social Support and Positive Outcomes of COVID Stress.....	91
Coding Results.....	92
Research Question #3: Specific Social Support Activities by Age and Gender..	103
Research Question #4: Receiving and Providing Social Support Activities and Positive Outcomes.....	106
Discussion.....	137
Social Support Network Variety and Optimal Aging.....	140
Social Support Activity and Optimal Aging.....	144
Limitations and Future Research.....	149
Conclusion.....	151
References.....	154
Appendices.....	181

## TABLE OF CONTENTS (Continued)

Appendix A Coping with the COVID-19 Pandemic Survey.....	181
Appendix B List of Open Codes and Code Descriptions.....	198

## LIST OF FIGURES

<u>Figure</u>	<u>Page</u>
2.1. Theoretical Model of Social Support and Optimal Aging.....	58
2.2. Analytic Model of Social Support and Health Outcomes I.....	59
2.3. Analytic Model of Social Support and Health Outcomes II.....	60
2.4. Analytic Model of Social Support and Health Outcomes III.....	61
2.5. Analytic Model of Social Support and Health Outcomes IV.....	62
3.1. Plot for Parallel Analysis.....	82
3.2. Example of an Analytic Model of Social Support and Health Outcomes.....	83
4.1. Modified Model I: Emotional Support and Health Outcomes.....	133
4.2. Modified Model II: Instrumental Support and Health Outcomes.....	134
4.3. Modified Model III: Received Support, Satisfaction with Received Support, and Health Outcomes.....	135
4.4. Modified Model IV: Provided Support, Satisfaction with Provided Support, and Health Outcomes.....	136



## LIST OF TABLES

<u>Table</u>	<u>Page</u>
3.1. Sample Characteristics for Quantitative Study and Qualitative/Mixed-Method Study.....	77
3.2. Positive Outcomes from COVID-19 by Socioecological Levels.....	78
3.3. Distribution of Social Support Network Size by Type and Social Support Satisfaction.....	79
3.4. Distribution of Outcome Variables.....	80
3.5. Result of Exploratory Factor Analysis for the Latent Factor.....	81
4.1. Contrasting Emotional and Instrumental Support by Received/Provided Support, Nested within Family and Friends.....	109
4.2. Comparing Family and Friends on Emotional and Instrument Support, Nested Within Received and Provided Support.....	110
4.3. Comparing Satisfaction for Received/Provided Emotional/Instrumental Support.....	111
4.4. Correlations among Study Variables.....	112
4.5. Complete Paths from Base Model I: Emotional Support and Health Outcomes.....	113
4.6. Modified Model I: Emotional Support and Health Outcomes.....	114
4.7. Complete Paths from Base Model II: Instrumental Support and Health Outcomes.....	115
4.8. Modified Model II: Instrumental Support and Health Outcomes.....	116
4.9. Complete Paths from Base Model III: Received support, Satisfaction with Received Support, and Health Outcomes.....	117
4.10. Modified Model III: Received Support, Satisfaction with Received Support, and Health Outcomes.....	118

## LIST OF TABLES (Continued)

<u>Table</u>	<u>Page</u>
4.11. Complete Paths from Base Model IV: Provided Support, Satisfaction with Provided Support, and Health Outcomes .....	119
4.12. Modified Model IV: Provided Support, Satisfaction with Provided Support, and Health Outcomes.....	120
4.13. Frequencies of Emotional Support Activities.....	121
4.14. Frequencies of Instrumental Support Activities.....	122
4.15. Frequencies of Received Emotional Support Activities by Age Groups.....	123
4.16. Frequencies of Provided Emotional Support Activities by Age Groups.....	124
4.17. Frequencies of Received Instrumental Support Activities by Age Groups.....	125
4.18. Frequencies of Provided Instrumental Support Activities by Age Groups.....	126
4.19. Frequencies of Received Emotional Support Activities by Gender.....	127
4.20. Frequencies of Provided Emotional Support Activities by Gender.....	128
4.21. Frequencies of Received Instrumental Support Activities by Gender.....	129
4.22. Frequencies of Provided Instrumental Support Activities by Gender.....	130
4.23. Correlations among Qualitative/Mixed-Method Analysis Variables.....	131
4.24. Regression Result of Qualitative Social Support Variables and Positive Outcomes.....	132

## LIST OF APPENDICES

<u>Appendix</u>	<u>Page</u>
A. Coping with the COVID-19 Pandemic Survey.....	181
B. List of Open Codes and Code Descriptions.....	198

## LIST OF APPENDIX TABLES

<u>Table</u>	<u>Page</u>
B1. List of Open Codes for Emotional Support.....	198
B2. Initial Consolidation of Open Codes for Received Emotional Support.....	204
B3. Initial Consolidation of Open Codes for Provided Emotional Support.....	209
B4. List of Open Codes for Instrumental Support.....	215
B5. Initial Consolidation of Open Codes for Received Instrumental Support.....	219
B6. Initial Consolidation of Open Codes for Provided Instrumental Support.....	223
B7. Code Descriptions.....	225

## LIST OF APPENDIX TABLES

<u>Table</u>	<u>Page</u>
B1. List of Open Codes for Emotional Support.....	194
B2. Initial Consolidation of Open Codes for Received Emotional Support.....	200
B3. Initial Consolidation of Open Codes for Provided Emotional Support.....	205
B4. List of Open Codes for Instrumental Support.....	211
B5. Initial Consolidation of Open Codes for Received Instrumental Support.....	215
B6. Initial Consolidation of Open Codes for Provided Instrumental Support.....	219
B7. Code Descriptions.....	221

## DEDICATION

I dedicate this dissertation to my mother, who believed in me when I didn't.

## INTRODUCTION

How can one age well? This question has been repeatedly asked by gerontologists for decades, and for millennia by every individual facing old age, albeit using different terminologies. This is admittedly a difficult question to answer, and under the influence of the COVID-19 pandemic, we may need to review our previous answers and see how they fare under these novel conditions. However, it also could be said that the pandemic situation presents us with a unique opportunity to study aging well. After all, having a shared stressor implies a natural experiment situation where the stressor is controlled for to an extent.

In the past 18 months, the COVID-19 pandemic has emerged as a global stressor with severe implications for public health. In particular, older adults were identified as the highest risk population and were encouraged to socially isolate themselves (Centers for Disease Control and Prevention [CDC], 2020). Not only were there concerns about their physical health, but also their mental health, due to social isolation (e.g., Berg-Weger & Morley, 2020). However, treating older adults merely as a risk group may be an ageist notion (Ayalon et al., 2020). For example, studies have documented older adults' contributions to community in natural disasters (e.g., Howard et al., 2017). Further, the social support literature has demonstrated that older adults are providers of social support as much as they are recipients (e.g., Krause, 1999; Thomas, 2010). In short, older adults are not just a vulnerable population in need of saving but may provide valuable services to their social networks and communities. Therefore, studying how older adults can age well in the COVID-19 context may also need to focus on what they can do as well.

The present study investigated the relationship between providing social support and aging well, controlling for the existing health conditions. This decision was informed by two frameworks on aging well: successful aging and optimal aging.

The successful aging framework may be the most popular answer to how to age well due to its clarity and simplicity. Rowe and Kahn's (1997) definition includes three components: (1) avoidance of disease and disability; (2) maintenance of cognitive and physical functioning; and (3) engagement in social relations and productive activities. These three components are deemed as both indicators of, and means to, successful aging. COVID-19 impedes all three components by acting as a direct risk factor for the first two, and by significantly hindering social engagement as it necessitates social distancing among people. This study focuses on an example of the third component, providing social support to others. This activity has both social and productive properties and may prove to be particularly important in the pandemic context.

Nonetheless, successful aging framework is not without criticism. Rowe and Kahn's (1997) criteria are very strict and do not consider some of the more complex issues in how individuals age. For example, Martinson and Berridge (2013) reviewed a group of successful aging critiques that criticized Rowe and Kahn's definition for being ableist, that is, discriminatory against disabled individuals. Thus, an individual with disability would never be able considered to age successfully, according to Rowe and Kahn's (1997) definition. Further, Strawbridge and colleagues (2002) have already shown that older adults can assess themselves to have aged successfully without satisfying these stringent conditions, and that some of those satisfying the conditions did not consider themselves to have aged successfully.



The rigidity of these criteria is also reflected in the hierarchical nature of the three components assumed by Rowe and Kahn (1997), in that first two components are necessary for the third component. Thus, only those who avoided disease and disability, maintaining cognitive and physical functioning are thought to be able to engage in personal relations and productive activities. However, Boerner and Reinhardt (2003) showed that older adults who have progressive visual impairment are still able to provide support, suggesting that the assumption of hierarchy may be flawed.

The optimal or healthy aging approach, on the other hand, generally focuses more on functional health and some form of thriving (e.g., Fernández-Ballesteros, 2005, Hansen-Kyle, 2005; Kim et al., 2021; Ryff & Singer, 2009). For example, the conceptual model proposed by Aldwin and Igarashi (2016) is an alternative to successful aging that addresses some of the criticisms of the successful aging approach. They take a resilience perspective and address optimal aging in terms of “three related goal processes: functional health, life satisfaction, and purpose in life” (p. 563). They argue optimal functioning may occur within current limitations, if individuals can develop a satisfactory life structure. This is acknowledging individual differences in development and limitations that cannot be overcome by individual effort alone, but also recognizing the role of individuals’ deliberate actions to age well. Accordingly, even an individual with disability or illness can be considered as optimally aging, if they are making adequate choices to develop and maintain adequate functional health, within current limitations, have a purpose in life, and exhibit reasonable life satisfaction.

This study employs optimal aging framework as the theoretical background for the analytic model. At the same time, this study acknowledges the strength of the successful aging

framework, which possesses components that are more operationalizable. For example, the successful aging framework specifies what functions should be maintained. The implication is that the more you preserve to the middle-age level, the better. Therefore, this study chooses social support, which comes from Rowe and Kahn's (1997) third component, as the behavioral predictor that may contribute to optimal aging. In the same vein, physical, cognitive, and mental health variables are chosen as indicators of optimal aging in terms of functioning. Current critiques of the successful aging framework argue that this model is too limited in specifying no chronic conditions, as most older adults have at least one chronic illness. Further, this stipulation may be seen as discriminating against individuals with disabilities (Depp et al., 2010). Thus, the optimal aging framework sought to modify this model by changing the definition to optimal functioning within current limitations (Aldwin & Igarashi, 2016), with a focus on health function rather than status. In other words, successful aging may not be so much as a state as a process. Therefore, this study's model utilized a hybrid model, combining types of health outcomes specified in successful aging framework with the acknowledgements of ongoing limitations. In doing so, it focuses on health functioning in the past week, given current limitations, rather than health status.

Another reason to argue that providing social support would contribute to optimal aging is in the context of COVID-19 pandemic itself. Activities have been restricted, often resulting in searching for something meaningful to do (Igarashi et al., 2021). This study identifies the act of providing support as a productive activity that leads to sense of meaning, which is related to the concept of purpose in life in the optimal aging framework, and, theoretically, more positive

outcomes from negative events. This will be explored with the qualitative/mixed-method analyses.

### **Social Support as a Productive Activity**

As mentioned earlier, the third component of Rowe and Kahn's (1997) definition of successful aging includes social relations and productive activities. It is believed that being engaged in social relations and productive activities is positively associated with older adults' well-being, such as higher levels of life satisfaction (e.g., Anderson et al., 2014) and fewer depressive symptoms (e.g., Adams et al., 2011). This is an area of interest shared by the productive aging approach, which also assumes positive relationships between older adults' engagement in productive activities and well-being. True to its claims, many studies have documented positive associations between the two (e.g., Hinterlong et al., 2007; Russell et al., 2019). However, there is no consensus on what exactly constitutes productive activities (Baker, 2005).

Sherraden and colleagues (2001, p. 266) suggested productive activities could be defined as "(1) market-based economic activities, (2) nonmarket activities with economic value, (3) formal social/civic contributions, (4) informal social assistance, (5) social relationships and activities, and (6) self-improvement (learning, fulfillment, enlightenment)"; but then excluded social relationships and self-improvement to maintain the clarity of the model. However, these activities are beginning to be included in more recent studies (e.g., Luo et al., 2021; Sagherian et al., 2020; Thang et al., 2019). Whether all researchers are in agreement or not, the definition of productive activities for older adults is becoming more and more inclusive.

This study follows the recent trend in seeking to expand the definition of productive activities by including providing social support. As informal social assistance, as suggested by Sherraden and colleagues (2001), could be considered as instrumental support, the novelty of this attempt specifically lies in considering emotional support as a productive activity. The focus on emotional support is particularly critical as many forms of practical social support may be restricted under the influence of the pandemic. However, as social support cannot be fully understood without examining both provided and received support, this study also takes into consideration received social support.

### **Social Support and Optimal Aging**

The findings regarding social support and well-being so far have been mixed (Siedlecki et al., 2014). Partly, this is due to the complexity of studying social support: the results vary depending on the kind of social support, the persons involved, and measures used to assess social support. For example, there are more mixed findings regarding received support, and provided support is more consistently associated with well-being (Thomas, 2010). Also, findings have been more consistent regarding subjective perceptions of social support such as perceived availability of support or satisfaction with received support (LaRocca & Scogin, 2015; Santini et al., 2015). However, very little research has been done examining satisfaction with provided support and its relationship with well-being.

Persons involved in the exchange of social support are generally studied as sources of social support. Research that considers social support sources assumes that the effect of social support differs by source (Dakof & Taylor, 1990; Montpetit et al., 2017; Scholz et al. 2012). This may be due to the relational nature of specific persons: while family is an obligatory relationship

that is expected to provide practical support in difficult situations, friendship is a voluntary relationship that individuals often seek more of morale support (Dupertuis et al., 2001). Of course, the effect of social support may vary according to the relational characteristics such as quality of the relationship (Uno et al., 2002). Support from family may be more susceptible to this than support from friends as older adults selectively compose their voluntary social network (Carstensen et al., 2003). Also, older adults may feel that their sense of independence and autonomy is threatened when they receive support, which would explain findings in which older adults' well-being is negatively associated with high levels of adult children's support (e.g., Silverstein et al., 1996). However, older adults' social support recipients (as opposed to sources of received support), and their association with well-being is rarely studied. Thus, important elements in older adults' social support are understudied for provided support.

The type of support provided or received by older adults is another important piece in the puzzle, although, following the familiar trend, there is more research on received support. As sources of social support, it is believed that family and friends differ in their functions (e.g., Crohan & Antonucci, 1989; Litwak & Szelenyi, 1969): family can offer long-term commitment and practical support, while friends are more relied upon for socialization and emotional support. However, Warwick and colleagues (2004), in their qualitative study, found that women with chronic pelvic pain received and valued practical, emotional, and informational support from all sources. While it seems rather contradictory to previous studies mentioned, this may be how social support is experienced when it is not quantified and ranked. On the providing side, Boerner and Reinhardt (2003) studied older adults with progressive visual impairment, which would make providing support increasingly difficult over time. Findings showed that older adults

provided more emotional support than practical support, and more for family members than for friends.

Regarding age and social support, the size of social network itself is thought to decrease in older age (Kahn & Antonucci, 1980), both due to death of social partners and older adults being more selective in composing their network (Lang & Carstensen, 1994; Lang et al., 1998). Gurung and colleagues' (2003) work is one of the few exceptions that did examine sources of support: using two waves of longitudinal data, they found that older adults' received support increased over three years. Heinze and colleagues (2015) employed a life-span model, showing that the 61-70 group had more support from their community than any other age groups.

In an earlier study, Krause (1999) examined three-year differences in social support. He found that perceived support was more stable than support actually received. Further, received support increased even though the overall contact decreased. While there were individual differences in frequency of contact with family, there were no differences in satisfaction scores for received and provided support. Finally, while older adults provided less practical support over time, the same was not true for informational and emotional support. This was a rare example of a project that studied both provided support and support satisfaction.

Not as much research have been conducted concerning social support and meaning. However, the few that did reports there are positive associations between emotional support, received and provided, with meaning in life (e.g., Krause, 2007; Krause & Hayward, 2012). A recent study by Hill and colleagues (2020) documented that sense of purpose predicted the frequency of daily positive events, connecting meaning and positive events. This supports this

study's research question that social support may be associated with positive outcomes in the COVID-19 pandemic. However, it cannot be denied that evidence is limited on this topic.

The gap in the social support literature pertaining to functioning is quite clear: more studies are needed that focus on provided support, support satisfaction, and persons involved. Further, this may be especially important during the COVID-19 pandemic. In regard to social support, meaning, and positive events, more research in general that could replicate the previous findings may be optimal.

### **COVID-19 and Older Adults' Social Support**

The social distancing policy may be a double-edged sword for older adults: while it protects them from contracting the disease, the resultant isolation may harm their mental health (Tyrrell & Williams, 2020). While findings vary by specific facets, social support, is known to be protective for mental health (Taylor, 2011), and is a means of being connected to other people. Thus, it would be beneficial to investigate how social support for older adults changed under the influence of COVID-19 and how it affected older adults' well-being.

The studies that investigated this matter so far indicate the importance of social support, although it seems older adults are coping with social distancing policies better than previously assumed. For example, Li and colleagues (2021) found that Chinese older adults had better mental health than their younger counterparts and that the group with the highest level of social support had better mental health than the other groups. However, they also found that older adults perceived lower levels of social support than other age groups, and that only moderate to high levels of social support from all sources were associated with better mental health. Kotwal and colleagues (2021) also found a decrease in loneliness in older adults; however, there was a

subgroup whose loneliness persisted or worsened, and insufficient social support appeared to be one factor. According to Luchetti and colleague (2020), older adults' loneliness increased between the first two waves, but then stabilized. However, their levels of loneliness were lower than those of younger age groups. Additionally, older adults reported higher perceived support compared to other age groups, and this perceived support increased over time for all age groups.

To summarize, older adults, aside from particularly vulnerable subgroups, seem to have coped better with isolation than expected in the early period of COVID-19. Still, social support is an important factor to consider.

### **Present Study**

This study examined providing social support as a productive activity among older adults during the early period of the COVID-19 pandemic. We were interested in whether they were able to provide social support to others, and also its association with optimal aging in terms of functioning and meaning. Baseline data from a longitudinal dataset with 50+ Oregonians was used. As a mixed-methods study, qualitative data from four open-ended questions was explored as well, in order to describe older adults' actual social support behaviors. Additionally, this study utilized pre-coded qualitative data regarding positive outcomes from the COVID-19 pandemic. This data was used for a previous study, of which the author was one of the co-authors and participated in the coding process.

Diverse aspects of social support were examined for fuller investigation. For example, received support, as well as its source and type, was included in the analyses. This study chose to focus on family and friends for two types of support, emotional and practical. Satisfaction with social support for both received and provided emotional and instrumental support was also



included. With qualitative data, specific social support activities were coded and examined as well.

Specifically, this study addressed two sets of questions. The first set of questions was quantitative and aimed to investigate the associations between social support and optimal aging in terms of health outcomes, controlling for age and chronic health conditions. The second set will address another element of optimal aging, the ability to find positive outcomes in stressful situations, in terms of meaning in life. For this purpose, specific social support activities older adults received and provided were described and examined by age groups and gender using qualitative data. Then, the relation between receiving and providing these specific social support activities and positive outcomes of COVID-19 was explored.

This study is a novel attempt in identifying providing social support, including emotional support, as a productive activity of older adults during the COVID-19 pandemic. This study attempted to provide additional evidence that older adults do provide support even in stressful situations, arguing against ageist stereotypes as old adults only being the recipients of support. In examining the association between social support and optimal aging, this study emphasized the role of age and chronic illnesses as the current limitations that older adults are experiencing. We believe that modeling and testing research questions in accordance with one of the components of the optimal aging framework will contribute to future operationalization for optimal aging research. This study will increase field's knowledge about older adults' social support activities under stressful situations. Also, the existence of a global stressor would help disentangle the associations between multiple facets of social support and older adults' well-being. These

findings will contribute to a better understanding of older adults' social support and related well-being.

## LITERATURE REVIEW

This chapter will review and critique the literature on social support and optimal aging in terms of functioning (depressive symptoms, physical symptoms, and cognitive lapses) and meaning, focusing on providing social support. The social support literature is vast, and includes a variety of differing types of support, especially perceived availability of support. Thus, the literature review presented here focuses on enacted support rather than perceived support, given the goals of the project. Note that many of the studies examine different facets of provided and/or received social support, and those facets are discussed in the appropriate sections.

The study is embedded within the theoretical framework of optimal aging. Thus, we will begin with a review and critique of optimal aging and its precedent, successful aging. Next, we will turn to the role of the provision and receipt of social support in optimal aging utilizing three theories: equity theory, social exchange theory, and esteem-enhancement theory. Social convoy model (Antonucci et al., 2014) will be used to critique and complement the three theories.

We will then review and critique the literature on social support and health, again focusing on actual support received and provided. We will focus on the three health outcomes relevant to successful aging, namely, physical symptoms, cognitive functioning, and depressive symptoms. The social support literature is particularly rich regarding depressive symptoms and allows for more specific review. For example, the differing associations between depressive symptoms and social support by support sources/recipients will be reviewed, followed by discussions of emotional and instrumental support, and of structure and quality. Also, the association between age and social support will be reviewed. Then, a separate section will be devoted to the COVID-19 pandemic and older adults' social support, as COVID-19 is an

unprecedented stressor that is influencing older adults' daily life, hindering social interactions, for an extensive period of time. Additionally, there will be a brief review on social support, meaning, and positive events.

Before reviewing the literature on social support, however, the relevant terminologies will be defined, as the different field of studies often use different terms for the same constructs.

### **Definition of Terms**

Social support can be defined as “an exchange of resources between two individuals perceived by the provider or the recipient to be intended to enhance the wellbeing of the recipient” (Shumaker & Brownell, 1984, p. 11). Perceived social support and enacted social support differ in whether they are cognitive appraisals or actual actions (Barrera, 1986). Gottlieb and Bergen (2010) define perceived social support as “[t]he individual's beliefs about the availability of varied types of support from network associates” and enacted received social support as “[r]eports about the types of support received” (p. 512). In accordance with these definitions, perceived support is usually asked as a hypothetical or in the present tense, and enacted support is asked in past tense. For example, if an inquiry is made about who would provide certain support, this is about perceived availability of support. One may have received support from that certain person in the past and may provide an answer based on that experience, or one may simply assume that because this certain person is close enough to them, they would provide such support if needed. In contrast, enacted support is strictly about what has taken place. Questions regarding enacted support would commonly ask who provided or who received certain support in last 12 months. Our focus is on enacted provided support, which we rely on reports of respondents about the social support they received or provided.

As we are dealing with both received and provided support, we need to differentiate between who provided support to respondents and who received support that respondents provided. Those who provided support to respondents will be referred to as sources of support, and this support will be discussed as received support from respondents' point of view. Similarly, those who received support from respondents will be referred to recipients of support and said support will be called provided support from respondents' point of view.

The sources and recipients of support are inherently embedded in social networks. Gottlieb and Bergen's (2010) defined the social network as "[a] unit of social structure composed of the individual's social ties and the ties among them", and structural support as, "[t]he number and pattern of direct and indirect social ties that surround the individual" (p. 512).

Finally, we employ the categorization of social support by Adams and colleagues (1996) and define emotional support as "listening and providing empathy", and instrumental support, "tangible assistance aimed at solving problem" (p. 413).

### **Successful Aging, Optimal Aging, and Social Support as a Productive Activity**

The successful aging framework is probably the most well-known framework that deals with aging well. The notion of successful aging appears in the history as early as 44 B.C., through an essay by Cicero, a Roman philosopher (Baltes & Baltes, 1990). Havighurst (1961), in the first issue of *The Gerontologist*, proposed a successful aging theory which could fulfill gerontology's purpose: to add more joy, happiness, and satisfaction in the old age. However, it is Rowe and Kahn (1987) who defined successful aging as the framework we are familiar with now. They separated successful aging from usual aging and proposed three factors: (1) low probability of disease and disease-related disability; (2) high cognitive and physical functional

capacity; and (3) active engagement with life, which includes interpersonal relations and productive activities.

The idea of productive aging was developed in 1982 at the Salzburg Conference (Butler, 2001). At this stage, productive aging simply indicated that older adults can and must stay productive. Morgan (1986) defined productive activities within the realm of traditional economic paradigm as any activity that creates goods and services. However, according to Hinterlong and colleagues (2001), other scholars started expanding the definition, including capacity-building activities and self-maintenance. In 2001, Sherraden and colleagues (p. 266) listed as potential productive activities, “(1) market-based economic activities, (2) nonmarket activities with economic value, (3) formal social/civic contributions, (4) informal social assistance, (5) social relationships and activities, and (6) self-improvement: learning, fulfillment, enlightenment”, but then excluded the latter two components for clarity’s sake. Nonetheless, the components excluded from their model are beginning to be included in recent studies (e.g., Sabbath et al., 2016; Thang et al., 2019).

Thus, the history of productive aging approach is a history of expanding the definition of productivity. This study follows suit, proposing providing social support as a form of productive activity. While Sherraden and colleagues (2001) have already suggested informal social assistance as a potential productive activity, which can be understood as instrumental support, they have not discussed emotional support. Including providing emotional support in productive activities will be this study’s novel contribution to the productive aging literature and to the third component of Rowe and Kahn’s successful aging framework.

However, the limitations of Rowe and Kahn's (1997) successful aging framework need to be acknowledged. First, their standards are too narrow and unrealistic for most people (Martinson & Berridge, 2015). Calasanti (2016) argued that Rowe & Kahn's successful aging is tantamount to not aging after middle-age. Also, it does not consider the complexity in transactions between human development and the environment. For example, individuals with disadvantages such as disability or disease will not be considered to be able to age successfully, according to Rowe and Kahn's definition (Pruchno & Carr, 2017), which has been seen as discriminatory (Teater & Chonody, 2020). Strawbridge and colleagues (2002) have already shown that older adults can assess themselves to have aged successfully without satisfying these stringent conditions. As Rowe and Kahn (1997) also argued that the first components, high physical and cognitive functioning, are necessary for the third component, engagement with life, it should be theoretically impossible for people with less-than-optimal functioning to be able to engage in personal relations and productive activities. As Boerner and Reinhardt (2003) illustrated with their study with older adults who have progressive visual impairment providing support to others, this is rather untrue.

Considering above criticisms, this study chose to employ optimal aging framework as the alternative of successful aging framework. It is also following the trend of the field, where researchers are shifting their attention to what people call healthy, resilient, or optimal aging. As the names for the alternative frameworks imply, researchers are focusing more on functional health rather than strict, absolute criteria that Rowe and Kahn (1997) offered (e.g., Fernández-Ballesteros, 2005, Kim et al., 2021; see Pruchno & Carr, 2017). As optimal aging framework argues, this study assumes that every individual has a chance of aging optimally even in the face

of current limitations (Aldwin & Igarashi, 2017). Aldwin and Igarashi (2016) proposed three components of aging optimally: optimal functioning given current limitations, a comfortable life structure, and purpose in life. This study chose to focus on two of those. In the quantitative part of the study, the associations between social support and optimal aging in terms of functioning will be examined, controlling for the number of chronic illnesses as the current limitations. Using chronic illnesses as the existing limitations and weekly functioning as the outcome is also in accordance with theory, as aging well in optimal aging framework is more of a process than a fixed status that successful aging framework assumes. While this study is cross-sectional in nature, examining how limitations that are chronic and have already been in place are associated with weekly health outcomes permits a process-focused lens.

However, the optimal aging framework has its share of criticisms as well. It is unclear what exactly optimal functioning given current limitations, a comfortable life structure, and purpose in life mean and how researchers can operationalize them. There are no criteria offered on how one can decide an individual is functioning optimally enough. There exist measures regarding purpose in life (e.g., Ryff, 1989), but it is unclear what the scores should be in order to be considered as optimal. While similar criticisms could be made for the successful aging framework, it is at least simpler and more specific in its criteria. As such, both frameworks have their strengths and weaknesses. Consequently, elements from both frameworks were borrowed to inform this study.

Following successful aging framework, this study proposes productive activities as a means to age well. Following productive aging approach and its expanding definition of productivity, we place providing social support as the focus of this study. Following the optimal



aging framework, this study also considers the existence of chronic illnesses as current limitations and investigates how engaging in social support activities is associated with weekly functioning and meaning. In the context of COVID-19, when it is recommended that older adults remain distanced from each other, providing emotional support through calls, emails, and virtual meetings, may be one productive activity they can maintain and derive meaning from, along with health benefits.

The next section introduces three theories that can explain the relationship between social support and well-being.

### **Theoretical Foundations of the Relationship between Social Support and Well-being**

Three theories are commonly used to explain the relationship between social support and well-being: equity theory, social exchange theory, and esteem-enhancement theory. We will use social convoy theory (Antonucci et al., 2014) to critique these theories,

Social exchange theory assumes that an individual aims to maximize gains and minimize losses (Homans, 1958). If older adults followed this line of thought, they would favor receiving support more than giving support in order to maximize their gains. However, Dowd (1975) adapted this theory for aging research to examine the power loss of older adults. He argued receiving support created power imbalances in terms of increased dependency. Thus, older adults were thought to be forced to repay support by complying with others, whether it is the government that pays them to retire, or their adult children who provide resources (see Wan & Antonucci [2016] for an update to this theory). By this notion of exchange, older adults could repay received support with provided support, which would not necessitate them to comply with greater power.

Similarly, equity theory (Adams, 1965; Walster et al., 1978) focused on the reciprocity of exchange, arguing that both under-benefitting and over-benefitting would lead to dissatisfaction through feelings of burdensomeness and unfairness. Thus, older adults would feel compelled to provide support when they have received it; and they would expect support in return when they have provided it. In contrast, esteem-enhancement theory posits that helping those in need can enhance one's well-being: essentially, providing can be more beneficial than receiving, as receiving support would indicate that one is in need (Batson & Powell, 2003). However, the difficulty with all three of these theories is that they do not take a lifespan perspective. That is, they fail to examine long-term patterns of change in support.

Social convoy model (Kahn & Antonucci, 1980) assumes a life-course approach in delineating individuals' social relations. A social convoy moves with the individual as they move forward in life, going through changes in its size and composition. However, the closest circle in the convoy, often composed of close family members and closest friends, is less likely to change in composition compared to other two circles.

The concept of social support bank (Antonucci & Jackson, 1990) is based on this temporal characteristic of social relations. Some relations require immediate rewards or reciprocity for an action taken. In other relations, social exchanges are conducted and evaluated over longer periods of time. As such, Antonucci and Jackson (1990) argued that support can be paid back or paid forward with a longer-term perspective.

As mentioned earlier, the temporal perspective is the piece of puzzle that was absent in both social exchange theory and equity theory. Both theories assume immediate payback of support, and thus, immediate reward maximization or immediate equity in support is assumed to

be needed. These may be true in some relations, in a farther convoy from self, with a stranger or a one-time business partner. However, social support exchanges usually take place in closer convoys, such as between family members or friends. A parent would not demand an infant to pay them back immediately for all their caregiving, for instance. Nonetheless, they may expect the grown-up offspring to take care of them after they retired.

Additionally, social exchange theory could be critiqued in that individuals do not always seek to maximize their gains. A loving parent would not try their hardest to receive more support than they give to their children. The notion of social support bank (Antonucci & Jackson, 1990) offers a longer-term perspective for social support exchange, such as parents expecting their children to take care of them in later life. However, if the relationship is a healthy, loving one, the parent would not necessarily keep exact count of what they provided and what they will receive. In other words, the preferred balance of social support may vary by relational characteristics, including where the social partner is located in the social convoy. These critiques are also applicable to equity theory in that the preferred balance of social support received and provided depends on relational characteristics.

Additionally, neither social exchange theory nor equity theory, as applied to the social support literature, consider certain intangible rewards. If individuals gain intrinsic rewards engaging in altruistic behaviors, such as enhanced self-esteem or personal meaning (Midlarsky & Kahana, 1994; Midlarsky & Kahana, 2007), then providing social support should not be understood only as cost. Individuals, in accordance with social exchange theory, may seek to maximize their gains through providing more support than receiving more support. Individuals,

in accordance with equity theory, may feel they received sufficient amount of rewards through providing to their beloved ones.

This study assumes that individuals gain intrinsic rewards when they provide support to others and pay intrinsic costs when they receive support from others, supported by esteem-enhancement theory. However, this is not by any means to overlook esteem-enhancement theory's limitations. Esteem-enhancement theory posits that individuals will prefer to provide support and face unfortunate consequences if they receive support. Is this always the case? Study results regarding received support are mixed (e.g., Kong et al., 2019; Liang et al., 2001), showing that the associations between receiving support and well-being are more complicated than the somewhat simplistic picture that esteem-enhancement theory paints. Results may vary as a function of who, following which social norms and expectations, provided or received what kind of support. For example, a parent would not only feel a surge of pride in themselves when they need to provide for their adult children who repeatedly failed at obtaining a job. They may also feel it is their children's turn to take care of them, accompanied by feelings of disappointment and embarrassment. As such, there may be some rewards accompanied by the act of providing itself. However, they may not be the only consequence of providing, because the act of providing support does not occur in vacuum.

These three theories may not be incompatible with each other, and even be complemented by each other, if they are appropriately placed on the constellation of the social convoy model. Generally, individuals may feel less discomfort receiving more than they give if it is from individuals in outer social circles. Even it is from individuals in inner social circles, individuals may feel they deserve to receive more if they are at certain stages of life, such as

childhood or late adulthood. This is because they can pay back, or they have already paid forward. Esteem-enhancement theory contributes by bringing intrinsic rewards and costs into the picture. Now, calculating rewards and costs needs to take into account their intrinsic forms as well. Individuals need to strike a balance between receiving and providing support, in order to either maximize their rewards or to equally benefit.

This study is primarily interested in the act of providing support as a productive activity. Considering providing support as a productive activity also aligns with esteem-enhancement theory in that engaging in productive activities is known to enhance self-esteem (Jackson, 1996; Siegrist et al., 2004). As elaborated above, providing or receiving social support may not lead to uniform consequences. However, this study makes the assumption that the act of providing support itself will be associated with fewer symptoms, even if other contextual factors may moderate this effect. In order to control for those contextual factors, this study only focuses on providing support to family and friends. This is because relational characteristics of membership in outer social circles can vary more than those in inner social circles, and individuals may want to receive rather than provide to those in the outer circles.

### **Social Support and Depressive Symptoms**

Based on these theoretical foundations from the prior section, we will then review the literature on the associations between actual received and provided social support and indicators of optimal aging. We will start with depressive symptoms, then proceed to physical symptoms, cognitive functioning, and meaning.

### ***Provided Support, Received Support, and Depressive Symptoms***

Much of the literature on received support fails to differentiate between perceived support and enacted support. Whereas perceived support indicates availability of support, enacted support is the support that actually took place. It is generally accepted that perceived support is positively associated with one's well-being, but that enacted support, in terms of received support, may show negative associations with well-being (Kaul & Lakey, 2003; Merz & Consedine, 2009). In contrast, providing support is typically only measured as enacted support, and demonstrates more consistent positive associations with one's well-being (Brown et al., 2003). This study focuses on enacted forms of support for both provided and received support. This is because the main focus of interest is the support actually provided by older adults, and its counterpart would be enacted received support, not perceived availability of support. Therefore, the following review will exclude the studies that are explicitly about perceived support. However, some studies that examined both perceived support and received support will be included and critiqued.

As mentioned earlier, most of the findings regarding older adults' received social support and depressive symptoms were in the direction predicted by social exchange theory. That is, those receiving more support were higher in depressive symptoms (e.g., Ang & Malhotra, 2016; Gur-Yaish et al., 2013; Kwon & Moon, 2010; Liang et al., 2001). However, other studies do not find significant associations with received support (e.g., Kong et al., 2019; Kroemeke & Gruszczynska, 2016; Stringa et al., 2020). Only one study reported a negative association between receiving social support and depressive symptoms (Gur-Yaish et al., 2013), and it was emotional support, which will be discussed in the next section.

Research on provided support also yields discrepancies. In accordance with esteem-enhancement theory, provided support was inversely related to depressive symptoms (e.g., Kwon & Moon, 2010; Stringa et al., 2020). However, others found no relationship (Kroemeke & Gruszczynska, 2016; Kwon & Moon, 2010; Liang et al., 2001). Chao (2011) found both negative and positive associations, in which the former was for providing financial and short-term instrumental support and the latter was for providing long-term instrumental support, that is, care-giving.

After closer inspection, we found several potential reasons for these contradictory findings. These will be considered in greater depth in the following paragraphs, but outlining them first might be helpful in sorting through this complicated literature. First, researchers often did not consider the sources or recipients of support. Second, researchers frequently pooled different kinds of support together in the same measure or analysis. Third, researchers sometimes measured different dimensions of support for each source or recipient within one study, failing to use matching measures. Finally, even when the study was (theoretically) about providing or receiving (enacted) forms of support, researchers nonetheless used measures for perceived support (e.g., Chao, 2011). Additionally, as an overall critique, researchers often used different measures, which made it difficult to compare the study results.

**Unspecified Sources of Support.** Sources for or recipients of support were seldom specified, including the studies that reported unexpected findings (e.g., Chao, 2011; Kong et al., 2019; Stringa et al., 2020). As a case in point, Chao (2011) utilized five waves of longitudinal data to examine older Chinese sample's social support and depressive symptoms. While they assessed many facets of social support such as network characteristics, frequency of contact, and

three types of provided and received support, their measures did not inquire about the provider or recipient of support. Consequently, they reported that receiving emotional, instrumental, and financial support was negatively associated with depressive symptoms, which contradicts esteem-enhancement theory. This may be because the relational characteristics of persons involved in support exchange are associated with well-being outcomes (Uno et al., 2002). Thus, in order to determine true effects of social support, sources and recipients of support need to be taken into consideration.

**Pooling Different Types of Support.** Many studies that reported nonsignificant associations between provided support and depressive symptoms added the scores for different types of support, such as emotional support and instrumental support, and used the combined figure for analysis (e.g., Kroemeke & Gruszczynska, 2016; Kwon & Moon, 2010; Liang et al., 2001). This is problematic as it has been well-documented that different types of support have different effects on well-being (Merz & Consedine, 2009). For example, Merz and Consedine (2009) found, in an older adult sample, that receiving emotional support from family had positive associations with well-being while receiving instrumental support from family showed nonsignificant associations. The different effects of emotional and instrumental support will be discussed in detail in the next section.

**Measures of Convenience.** Using secondary data may not leave researchers with many options. For example, Kwon and Moon (2010) used emotional support measures for spousal support, a scale that included both emotional and instrumental support for support from and to children, three Likert-type items for receiving instrumental support from others, as well as questions asking how many hours they provided certain types of instrumental support to others.



Consequently, although they examined differences among sources of support, their measures did not capture the same dimensions of social support. This practice may be the reason for the findings that are not well explained by any of the theories. They reported negative associations with depressive symptoms for receiving support from spouse and others, but positive association for receiving support from children. There was no relationship between providing support to spouse, children, and others. However, the findings could have been more consistent if they had access to matching measures.

**Measurement Variance.** Lastly, studies which purportedly are measuring the same construct, such as received support, may actually be tapping different dimensions. For example, Ang and Malhotra (2016) showed that enacted received support, which was measured by asking about support experienced in past 12 months, increased depressive symptoms through decreasing personal mastery. In contrast, Chao (2011) measured received emotional support as willingness of others to listen to participant, and reported negative associations with depressive symptoms.

### *Summary*

This section reviewed the extant literature on older adults' social support and depressive symptoms, comparing provided support and received support. Provided support generally had negative associations with depressive symptoms; received support had more mixed findings. We found that many studies did not differentiate between sources or recipients of support, which may be one reason for the conflicting findings. Thus, we will next take a look at the studies that did differential sources or recipients of support, and examine their findings on depressive symptoms.

## Sources and Recipients of Support

Not only the presence of support, but from whom the support is received, is also critically associated with well-being (Li et al., 2014). Most studies on social support in old age assume older adults are the recipients of support, but older adults can and do provide support as well; even those with multiple illnesses or deteriorating eyesight are able to provide support (Boerner & Reinhardt, 2003; Warner et al., 2010). Then, not merely the sources, but the recipients of older adults' social support, must be identified to fully explain associated outcomes. The pathways through which sources or recipients affect social support outcomes may be as follows.

First, family and friends have different roles to fulfill. For example, friends are more relied upon for morale support, while family members take on instrumental support when one is in need (Agneessens et al., 2006; Crohan & Antonucci, 1989; Litwak & Szelenyi, 1969). Additionally, even within family, there are different norms or expectations for support from spouse, siblings, and children. Violating these expectations can be detrimental for one's well-being (e.g., Silverstein et al., 1996).

Second, according to Socioemotional Selectivity Theory (Carstensen et al., 2003), older adults selectively choose their social network members. This is because older adults have different social goals compared to younger adults, which lead them to keep close emotional ties but reduce peripheral ones (Lang & Carstensen, 1994). Consequently, the quality of friendship does not vary as much as the quality of relationships with family members (Pinquart & Sorensen, 2000). As the effect of social support is related to the quality of the relationship (Uno et al., 2002), the more varied quality of family social support can lead to more mixed findings.

However, because relationships with friends are more voluntary than obligatory, reciprocity may be more important for friend support (Dupertuis et al., 2001).

Nonetheless, providing and receiving support are rarely examined in one study; family and friends are seldom examined both as sources and recipients of support. One exception is Thomas (2010), who found that while receiving from spouse and siblings, and giving to children and friends, were positively associated with well-being; receiving support from children was negatively associated with well-being. Also, receiving support from friends and other family members, and giving to spouse, siblings, and other family members, had nonsignificant associations with well-being. These complicated findings may be because the author pooled emotional support and instrumental support together, and because it was perceived rather than support that was measured. Measuring participants' satisfaction with each support source or recipient may have helped disentangle the results as well. Considering that each family member would follow different norms regarding social support, it is not surprising that research on family support had mixed findings.

In other studies, friend support was mostly associated with positive outcomes. For example, Dupertuis and colleagues (2001) found that older men whose primary support source was friends had better physical health than those who primarily relied on family. Also, those who primarily relied on friends reported depressive symptoms at comparable levels with those with primarily family support; both groups were lower than their counterparts who did not have support. However, their analyses did not control for other factors, such as sociodemographic variables. Additionally, the cross-sectional nature of data did not allow them to infer causal relations. For this reason, it could also be assumed that the causality is in the opposite direction.

Being in better physical health and having fewer depressive symptoms may lead to more friends and their support.

Kim and colleagues (2000) also found mixed results for family support, but results for friend support found mostly positive associations with quality of life. According to their findings, older rural Korean men showed higher quality of life when they provided more support to their friends, and when they both provided and received support at high levels. In case of older rural Korean women, those who provided and received high levels of support to friends had the highest quality of life, among their counterparts who provided and received different levels of support to friends. Again, the cross-sectional nature of data did not allow them to infer causality. We cannot rule out the possibility that older Koreans with higher quality of life are able to provide or receive high levels of support to or from friends.

Evidence for positive outcomes associated with family support also exists. Okabayashi and colleagues (2004) studied an older Japanese sample and found that social support from spouses and children was associated with higher life satisfaction and fewer depressive symptoms. Li and colleagues (2014) showed positive outcomes for both family support and friend support: for older Chinese who were married, mutual support with friends was associated with higher positive affect, and mutual support with spouses was associated with less negative affect. For those who were divorced or widowed, friend support was associated with higher positive affect, and children support was associated with less negative affect. However, authors combined scores for received and provided support, making it impossible to disentangle their effects for these dimensions. Additionally, many of the studies mentioned were not conducted with US older adults. As sources and recipients of support are important to consider because of

accompanying norms regarding social support, different cultures may differentially affect how social support works between certain relationships. For example, the differing patterns of intergenerational support between the East and the West could be explained by the prominence of filial norms in the East (Lin & Yi, 2011).

### ***Summary***

In summary, outcomes of family support and friend support may vary depending upon the relationship one has with the sources or recipients. As Socioemotional Selectivity Theory (Carstensen et al., 2003) posits, older adults intentionally compose their social network, namely, friends, which makes the quality of relationships high and health outcomes of support positive. On the other hand, family relationship varies. Additionally, family members tend to have different norms for social support. This leads to findings regarding family support more mixed than friend support. However, these are not the only factors that contribute to complexity of this literature. We must consider what types of support is received or provided as well.

### **Types of Support**

There are many different types of support. For purposes of this dissertation, we will focus on two: emotional and instrumental support.

#### ***Emotional Support***

In general, emotional support has negative associations with depressive symptoms (e.g., Chao, 2011; Gur-Yaish et al., 2013; Stringa et al., 2020). However, the same problematic practices persisted in measuring emotional support: researchers often did not investigate the source or recipient of support, or measured perceived support and presented it as received support (e.g., Chao, 2011).

In an older Dutch sample, Stringa and colleagues (2020) reported that receiving emotional support was not significantly related to depressive symptoms; however, providing emotional support was marginally significant, having negative associations with depressive symptoms. This finding is in accord with esteem-enhancement theory. However, the latter result contradicts other studies that demonstrated negative associations between receiving emotional or psychological support and depressive symptoms (e.g., Gur-Yaish et al., 2013). This may be due to how Stringa and colleagues (2020) measured emotional support: for both providing and receiving, they only inquired about how often confiding took place in the past year. As such, Stringa and colleagues' (2020) findings regarding emotional support may be better understood as results limited to depressive symptoms' association with confiding to close social network members.

### ***Instrumental Support***

Findings were more mixed for instrumental support. Only Chao (2011) reported negative associations between instrumental support and depressive symptoms for older adults in Taiwan. Both receiving instrumental support and providing short-term instrumental support were significantly and inversely associated with depressive symptoms. However, Heo et al. (2014) found a nonsignificant association between receiving instrumental support with depressive symptoms. This may be because the sample for Heo and colleagues' study was patients with heart failure and was not limited to older adults. The social support measure used was specifically designed for instrumental support relevant to their conditions as well (e.g., symptoms management), making it difficult to generalize this result to other types of instrumental support and older adults.

Several studies found positive associations between instrumental support and depressive symptoms (e.g., Chao, 2011; Djundeva et al., 2015; Gur-Yaish et al., 2013). Djundeva and colleagues (2015) studied older adults receiving instrumental support from their non-resident adult children, and found a positive association with depressive symptoms. This is in line with esteem-enhancement theory, and also with an older study by Silverstein and colleagues (1996) that discovered high levels of support from children could cause harm in older adults' well-being through feelings of being a burden. However, what Chao (2011) operationalized as providing long-term instrumental support was helping those who cannot manage daily activities on their own. This activity belongs to caregiving category, which has its own academic literature. Gur-Yaish and colleagues (2013) went deeper and explored the interaction effects between instrumental support from an informal caregiver and functional status in hospitalized older adults in Israel. While high-functioning older adults showed positive associations with depressive symptoms, there was no relationship for low-functioning older adults. This finding speaks to the fact that merely knowing that one received or provided instrumental support may not be insufficient in predicting a certain well-being outcome in older adults. In other words, it is about needs being met. One will be satisfied with support when their needs are met (Krause, 1987), and this will affect health outcomes.

### ***Summary***

The extant literature shows mostly negative associations with depressive symptoms for emotional support; findings are more mixed for instrumental support. Again, the types of support alone may not be a sufficient factor for a certain outcome to occur. We have examined the directionality of support, sources and recipients, and types of support so far, reaching similar

conclusions. Perhaps the question we need to ask is if participants' needs are met by each act of support, in other words, if they are satisfied with the support provided or received, whether it is emotional or instrumental. Therefore, we decided to examine social support satisfaction, which is perceived quality of social support. Given that researchers often contrast support satisfaction with network size, we will also review literature on social network size, which is objective quantity of social support.

### **Social Network Size and Social Support Satisfaction**

The matter of quantity versus quality of social support was identified by Antonucci (1990) as one of the crucial research questions in this field. Related concepts include structure versus function, and social network versus social support, which are slightly different terms, but indicate in general objective properties and subjective properties of social support (Antonucci, 1990). For instance, the characteristics of social network such as its size and density would denote quantity of social support, while assessment of social support provided or received would be quality.

As with the case of enacted support and perceived support, the subjective perception of social support may be a stronger predictor for older adults' depressive symptoms than objective markers of social support. Antonucci and colleagues (2013) have also stated that quantity is important, but quality is a stronger predictor for one's well-being. As Krause (1987) asserted, mere provision of support does not lead to feelings of content. Individuals are only satisfied with support when they subjectively assess the support to be adequate and meeting their needs (Krause, 1987). Therefore, assessing satisfaction with social support may be the most direct means to capture individuals' perception of support.



The following study results conform to this hypothesis. While there were studies that reported that larger network size was associated with fewer depressive symptoms (e.g., Chao, 2011; Stringa et al., 2020), other studies showed nonsignificant results (Bui, 2020; Oddone et al., 2011). However, as for social support satisfaction or related constructs, all studies reviewed showed negative associations with depressive symptoms (e.g., Fuller-Iglesias., 2015; Millán-Calenti et al., 2013; Oddone et al., 2011).

It may be possible to disentangle the mixed findings regarding the network size. Bui (2020) used two waves of data to conduct lagged regression analyses: depressive symptoms from the first wave were entered in the model predicting the depressive symptoms in the second wave. Also, aside from simple network size, Bui (2020) also utilized other variables relevant to network structure, including number of people living with the participant, proportion of female, number of close ties, network density, and frequency of contact. Network density was the only significant variable among the network structure characteristics. The studies that reported significant associations between older adults' depressive symptoms and network size could have actually found the effect of network density. Additionally, the nonsignificant association Oddone and colleagues (2011) reported was found in a sample of older adults who were diagnosed with depression, and may not be adequate for generalization.

There were surprisingly few studies that specifically measured and examined social support satisfaction in relation to older adults' depressive symptoms. In a rare example, Chao (2011) did inquire about social support satisfaction, but it was limited to emotional support, which was only one type of support among others that were examined. As related constructs, Millán-Calenti and colleagues (2013) used satisfaction with contacts; Fuller-Iglesias (2015),

relationship satisfaction. Oddone and colleagues (2011) measured subjective social support, which included relationship satisfaction.

Of particular note is Social Support Questionnaire-6 (SSQ-6) used in a few studies (e.g., Dalmida et al., 2013; Friedmann et al., 2014). This measure adds up the scores for the number of potential support sources and social support satisfaction, a combination of social network size and social support satisfaction. However, Dalmida and colleagues (2013) used this scale to measure social support satisfaction and reported an association with fewer depressive symptoms.

On the other hand, there was no recent work on older adults' depressive symptoms that focused on satisfaction with provided support. The most relevant study we could find was an older work by Krause (1987). Krause (1987) examined both the satisfaction with provided and received social support, also specifying the types of support for the latter. While the satisfaction with informational support received had non-significant results, the satisfaction with both the instrumental and emotional support received were significantly associated with fewer depressive symptoms and better self-reported health (Krause, 1987). In addition, the satisfaction with provided support was significant for fewer depressive symptoms.

### ***Summary***

As expected, there was more evidence for the negative associations between social support satisfaction and depressive symptoms; for social network size, negative associations and nonsignificant results coexisted. We cannot conclude that social network size as an objective marker of social support does not contribute to one's well-being. However, we can argue that social support satisfaction is a more consistent predictor in relation to older adults' well-being. For this reason, this study focuses on older adults' social support satisfaction.

## **Social Support and Physical Health**

There is less research of the effect of social support on physical health outcomes compared to psychological outcomes (Gruenewald & Seeman, 2010). Most studies that documented significant associations between social support and physical health utilized measures of perceived support instead of enacted support. In particular, there was an absolute dearth of literature on enacted social support and physical symptoms in late life. Thus, this section will review studies that did examine enacted support and some measures of physical health, with a focus on physical symptoms.

Two studies that did examine associations between enacted received or provided social support and physical symptoms showed negative associations, that is, more enacted social support was associated with fewer physical symptoms (Chen & Chien, 2020; Piferi & Lawler, 2006). However, neither study differentiated between types of support, and their samples were not older adults. Chen and Chien (2020) focused on married young women in Taiwan; Piferi and Lawler, on undergraduate students. Another study by Heo and colleagues (2014) reported a nonsignificant association between received instrumental support and physical symptoms in an older sample of patients with heart failure. As the measures for received instrumental support and physical symptoms were specifically for patients with heart failure, it may be difficult to generalize this finding.

Received support in general had positive associations with physical health. As described above, Heo and colleagues (2014) showed a nonsignificant association. However, three other studies showed that received support was positively associated with physical health (Chen & Chien, 2020; Piferi & Lawler, 2006; Warner et al., 2010). In particular, Warner and colleagues

(2010) specifically focused on emotional support, which had positive associations with physical quality of life in a sample of German multimorbid adults.

As Gruenewald & Seeman (2010) noted, less attention has been paid to provided support than received support. Warner and colleagues (2010) found that provided emotional support had positive associations with physical quality of life. Brown and colleagues (2003) also reported that participants who provided more instrumental support to friends, neighbors, and relatives other than spouse were less at mortality risk. Piferi and Lawler (2006) measured tendency to provide social support in undergraduate students, which was negatively associated with physical symptoms. Ostir and colleagues (2002) studied satisfaction with provided support with a sample of older women with disability and found that higher satisfaction was associated with better physical performance and less activities of daily living [ADL] difficulties. The group with lowest satisfaction was more at risk for hospitalization and mortality.

### ***Summary***

In summary, the paucity of literature that examined enacted support and physical symptoms should be noted. The results of the few that did examine the two are not generalizable to common older adult population because of the specificity of the sample. In terms of physical health, there was more support for received support having positive associations. Regarding provided support and physical health, there were insufficient studies to reach a conclusion. It should be noted that some studies did not differentiate between types of support. Only one of the studies specified the source of social support.

## **Social Support and Cognitive Functioning**

The literature regarding social support and cognitive functioning is vast. However, most of them focused on perceived social support and not enacted support. Moreover, there is a shortage of studies that examined provided support and cognition (Costa-Cordella et al., 2021). Family and friends were usually considered in measuring social ties such as contact frequency (e.g., Hughes et al., 2008), and were not differentiated as sources or recipients of emotional or instrumental social support.

Received support had relatively consistent results across studies, more so for emotional support than instrumental support. Received emotional support showed positive associations with cognitive outcomes, while received instrumental support had nonsignificant associations in regard to cognitive functioning (e.g., Ellwardt et al, 2013; Glymour et al., 2008; La Fleur & Salthouse, 2017). In particular, Ellwardt and colleagues' (2013) findings are noteworthy as they tested whether loneliness, as an indicator of perceived support, fully mediated the relationship between received social support and cognitive outcomes. They found that there was direct effect of received emotional support, particularly for the older sub-sample (65+) on the outcomes. This finding suggests there is more to enacted received emotional support than can be explained by perception of support. In the case of instrumental support, loneliness did not fully mediate the relationship with cognitive outcomes. However, this was only for the full sample. For the older sample, there was no direct or indirect effect of receiving instrumental support.

Seeman and colleagues' (2001) research utilizing the MacArthur Studies on Successful Aging found that received emotional support had positive associations with cognitive functioning in both baseline and longitudinal analyses. Received instrumental support had

negative associations with cognitive functioning with the baseline data, but showed nonsignificant results with the longitudinal data. As they controlled for physical health measures, the negative association between received instrumental support and cognitive functioning is not due to poor health conditions; it could be due to the harmful effect of receiving instrumental support. The longitudinal data seem to negate this possibility, but it should be noted that they utilized only two waves of data. What they suggested as changes could be merely measurement errors (see Ployhart & Ward, 2011). Or, the healthy older adults who did not welcome instrumental support at the first time point may really have changed their attitudes toward instrumental support in eight years. In short, it is difficult to interpret these findings.

In contrast, Dickinson and colleagues (2013) reported that decline in received instrumental support was associated with decline in cognitive functioning with a sample of depressed and non-depressed older adults. As they also included the frequency of social interaction into the model, which had significant association with cognitive functioning, received instrumental support was not a proxy for social interaction. This discrepancy with Seeman and colleagues' (2001) findings may be partially attributable to the differences in sample characteristics and the time when the studies were conducted. MacArthur Studies of Successful Aging sampled high-functioning older adults in their 70s at the baseline, which was in 1980s. Dickinson and colleagues' (2013) sample did have exclusion criteria, but they concerned psychological health, not physical functioning.

On the other hand, Hughes and colleagues (2008) reported nonsignificant results for both received emotional support and received instrumental support. Instead, satisfaction with social support was positively associated with cognitive functioning. The lack of significant associations

of received support may be partially due to how they were measured: in contrast to most of the studies reviewed in this section, researchers specifically inquired about past month's experience of received support. As the sample was a well-educated and relatively healthy group of older adults, difficult life events that would necessitate social support may have been scarce in the short time frame. Additionally, they categorized the question regarding "having someone to talk to about important decision" as satisfaction with social support (p. 242).

As most of the studies focused on perception of received support, there was a dearth of research that examined provided social support and cognitive outcomes. A few of those who have did not examine emotional support and instrumental support separately (e.g., Ayotte et al., 2013; Seeman et al., 2001; Whitfield & Wiggins, 2003). Seeman and colleagues (2001) reported nonsignificant effects for general provided support; Whitfield and Wiggins (2003) found positive effects on cognitive outcomes. Ayotte and colleagues (2013) found positive associations for provided support, but negative associations for received support, controlling for physical functioning scores. Again, as they did not differentiate between types of support, it is difficult to reach a definite conclusion on this subject.

La Fleur and Salthouse's (2017) work deserves special mention in that they studied the relations among various aspects of social support and cognitive functioning. Further, they controlled for the general social support factor from their social support variables, which was generated through principal component analysis. A similar process was repeated for general intelligence, the g factor, from cognitive measures, which was also then covaried. Positive associations with cognitive functioning were found for received emotional support. Providing emotional support had a positive association with vocabulary, but it also had a negative

association with reasoning. Nonsignificant results were reported for received instrumental support, provided instrumental support, and support satisfaction. It should be noted that the sample included adults of all ages, not only older adults. Additionally, we might want to contemplate the meaning of the variance unexplained by the g factor and the general social support factor. La Fleur and Salthouse (2017) wanted to explore the unique contribution of specific social support aspects after controlling for what the other aspects of social support could contribute as well. As important findings as these are, we need to bear in mind that the results are not directly comparable with other studies. However, the nonsignificant results for instrumental support are in line with previous findings. The reason support satisfaction had nonsignificant results could be attributed to the fact that it was measured with one dichotomous item, resulting in less variability.

### ***Summary***

In terms of received support, emotional support had positive associations with cognitive outcomes, while instrumental support had more mixed findings across studies. As previously mentioned, one possible way to disentangle the above mixed findings could be to examine social support separately by its sources and recipients. Regarding provided support and social support satisfaction, the dearth of studies on these subjects does not allow for a tentative conclusion.

### **Social Support and Meaning**

The qualitative/mixed-method questions of this study concern older adults' social support activities, provided social support in particular, and how they might relate to positive outcomes from the COVID-19 pandemic. This is based on the hypothesis that meaning could be derived



from social support, leading to positive outcomes during a pandemic. While this question is exploratory in nature, there is some literature that could support this hypothesis.

One aspect of optimal aging framework that discriminates it from successful aging framework is its primary focus on well-being pertains purpose in life (Aldwin & Igarashi, 2017) rather than life satisfaction. Sense of purpose, a critical factor in psychological well-being (Ryff, 1995), could be explained as having a goal in life and having a “vision of how life *should* be” (Costin & Vignoles, 2019, p. 865). Sense of purpose is also considered as a dimension of meaning in life, along with coherence and mattering (George & Park, 2017).

Taylor and Turner (2001) have argued that receiving support can be protective for mental health by a sense of mattering to others. Krause (2007) has stated that receiving support can make older adults feel valued and that they belong, which could lead to deeper meaning in life. Two studies reported positive associations between receiving emotional support and meaning in life. In the first study, Krause (2007) showed that received emotional support had indirect effects through anticipated support on meaning in life. In the other study, Krause and Rainville (2020) found that received emotional support and satisfaction with support had positive associations with meaning in life, mediating the relationship between age and meaning in life.

On the other hand, there also could be benefits from providing support. Midlarsky and Kahana (1994) studied altruism in older age, specifically, helping behaviors by older adults, and suggested that individuals could derive personal meaning from altruistic behaviors, especially when life is finite. Klein (2017) reported that prosocial behaviors, such as volunteering and spending money for others, were positively associated with perceptions of meaning in life.

Krause and Hayward (2012) also documented that provided emotional support predicted stronger sense of meaning in life.

Finally, Hill and colleagues (2020) found that sense of purpose predicted the frequency of daily positive events. According to Hill and colleagues (2020), this may be due to purposeful individuals actually generating more positive events, or due to them perceiving events as more positive.

### ***Summary***

While the evidence is focused on emotional support, there is small literature that connects social support and meaning in life. Additionally, there was one study that documented the link between meaning and positive events. This supports this study's hypothesis that social support is associated with meaning, and that meaning may be related with certain positive outcomes older adults experienced during the early period of COVID-19.

### **Age and Social Support**

It is well-known that the size of social network typically decreases in later life (Lang & Carstensen, 1994), but this does not mean the quantity and quality of social support decline as well. Socioemotional Selectivity Theory posits that older adults focus their diminished energy on composing and keeping a close-knit network (Lang & Carstensen, 1994). As a case in point, Martire and colleagues (1999) found that older adults' perceived support increased over time. Similarly, Gurung and colleagues (2003) reported increases in perceived emotional and instrumental social support over 23 months of time. It should be noted that while age did not have significant associations with said changes in support, Gurung and colleagues' (2003) sample was composed of high functioning older adults whose age ranged from 70 to 79.

As for actual received support, Krause (1999) reported three-year differences in social support for older adults, showing that both emotional and instrumental support increased significantly. On the contrary, Siedlecki and colleagues (2014) provided zero-order analyses results which showed that younger age was correlated with more received support. However, they did not differentiate the types of support, and their sample included younger adults as well. Birditt and colleagues (2012) found that younger respondents received more emotional support, while there was no age effect for received instrumental support. However, their sample was constrained to those who experienced three or more stressful life events in the past year. It was also a dyad/triad study, in which the respondents were inquired about the support from specific sources rather than from the entire social support network they had.

As for providing support, some researchers discussed the possibility that older adults may try to balance out increase in received support with providing more emotional support (Boerner & Reinhardt, 2003; van Tilburg, 1998). Results are mixed so far. Krause (1999) found while older adults may provide less instrumental support over time, the amount of informational and emotional support remained stable. Boerner and Reinhardt (2003), in their sample of older adults with progressive visual impairment, showed that the participants kept providing emotional and instrumental support, even if the amount for both decreased over time. Regarding age, they showed younger age was related with more provision of instrumental support to friends, and emotional support to both family and friends. However, they measured social support with the number of recipients the respondents provided support to, essentially measuring the size of social support network.

There is a dearth of studies focusing on the relationship between age and satisfaction with social support in older adults. Krause (1999) reported non-significant mean differences in satisfaction with social support over three years. Lamont and colleagues (2017) showed there was non-significant correlation between age and satisfaction with social support.

### ***Summary***

It is well-accepted that the size of social network decreases with age, and that provision of instrumental support decreases with age. However, the literature on other relationships between age and various facets of social support is inconclusive. Some results reported were from zero-order analyses which did not control for critical factors pertaining to social support such as physical functioning. Seemingly contradictory results were obtained for some studies due to differences in measuring social support. Consequently, this study will rely on Socioemotional Selectivity Theory (Lang & Carstensen, 1994) in forming hypotheses regarding age.

### **COVID-19 and Older Adults' Social Support**

Having reviewed the general relationships between actual support and health outcomes, it then makes sense to see if the COVID-19 pandemic has altered any of these relationships. A review by Xiong and colleagues (2020) found relatively high levels of depression and psychological distress have been confirmed in general population during the COVID-19 pandemic. Older adults are an especially vulnerable age group for COVID-19 (Centers for Disease Control and Prevention [CDC], 2020), and there was concern that social distancing measures might act as a double-edged sword for them, as it may isolate them and harm their mental health (e.g., Berg-Weger & Morley, 2020). Social support is known to be an important social factor for older adults' well-being (Li et al., 2014). However, surprisingly few studies have

examined older adults' social support in the COVID-19 context to date. Hence, most studies that are included in this section are not limited to older adult samples or specifically depressive symptoms (e.g., Li et al., 2021; Minahan et al., 2021).

Regarding social support and well-being, almost all outcomes were in the positive directions: if higher levels of social support were received or were available, one was more likely to enjoy better psychological well-being, such as fewer depressive symptoms or less loneliness (e.g., Grey et al., 2020; Groarke et al., 2020; Minahan et al., 2021). However, a study by Zysberg and Zisberg (2020) suggested that the outcomes may differ by the type of the support: while perceived psychological support had negative associations with worry, instrumental support had positive associations. This result supports previous findings that sometimes receiving instrumental support is associated with poorer outcomes (e.g., Djundeva et al., 2015), which may be due to the feelings of loss of autonomy (Silverstein et al., 1996). Nonetheless, younger adults participated in this Israel study as well, and the sample was highly educated, with 43% having Master's degree or higher, limiting comparison with other studies.

Li and colleagues (2021) investigated Chinese adults' social support profiles and mental health, dividing sample into three age groups: younger, middle-aged, and older adults (60+). They found that older adults had lowest levels of received social support overall, except for family support. Also, the distribution for the predominantly proximal profile, a class in which family support is relatively high but other support is low, was higher in older adults than other two age groups. This is in line with the finding that kin rather than non-kin are more relied upon for support in emergency situations (Taylor et al., 1988), and that family-focused network type is most prevalent in older adults (Suanet & Antonucci, 2016). In relation to mental health, only

moderate to high levels of social support from all sources were found to be associated with better outcomes for older adults, and those with low resilience levels, irrespective of age. However, authors did not specify what types of support participants received.

Sin and colleagues (2021) examined adults in US and Canada for both providing support as well as receiving support, focusing on prosocial behaviors and their outcomes in the pandemic context. They found that more formal volunteering and providing more support were associated with higher mean daily positive affect, lower mean negative affect, and more satisfaction with social activities and relationships. Similarly, receiving more support was associated with higher mean daily positive affect and more satisfaction with social activities and relationships, but there was no association with negative affect. In secondary analyses, they found both emotional and instrumental support provision were associated with higher positive affect and satisfaction, but that only emotional support provision was associated with lower negative affect. While receiving both types of support was associated with higher satisfaction, only receiving instrumental support was associated with higher positive affect. As receiving support has often been associated with negative health outcomes, authors suggested that it may be because they inquired about support specifically related to COVID-19, and as such, the support received may have matched the participants' needs. However, this study did not examine the sources and recipients of support.

Nonetheless, Sin and colleagues (2021) found that older adults (60+) volunteered more frequently than other age groups; provided help and emotional support at rates similar to the middle-aged group and more than younger adults; but that they provided instrumental support at similar rate to younger adults, which was less than middle-aged group. Also, older adults

received more support of any type, and emotional support than the two other groups; and there were no age differences in receiving instrumental support. These findings indicate that older adults are capable of providing support in the pandemic context, even if the social distancing measures hinder them from providing some forms of instrumental support.

### ***Summary***

Thus, there are only few studies published to date on older adults' social support and related health outcomes in COVID-19 context. However, some of the studies were not exclusively with older adult samples; some of them were conducted on different countries with different cultures and COVID-19 policies; and no study examined at the same time provided and received support, sources and recipients, types of support, and social support satisfaction. Nonetheless, they did provide evidence that older adults were still providing social support in COVID-19 context and that this was related to better well-being.

### **Summary**

This chapter reviewed the extant literature on diverse facets of social support and older adults' health outcomes, and has shown the complex nature of the effect of social support on optimal aging. Understanding a single act of social support involves understanding of direction of provision, i.e., who provided what to whom. Social support satisfaction, as a subjective assessment of social support, is also an important factor to consider. Many studies neglected to consider various facets at once, such as sources for the received support and whether the support was emotional or instrumental, if they examined enacted support at all. However, there are few COVID-19 studies that confirmed older adults are providing social support in this trying time, and that this was associated with positive health outcomes. Nonetheless, more studies on US

older adults examining various facets of social support are needed to understand how older adults optimally age even during the pandemic.

### **Present Study**

As we have seen, there are many discrepancies in the literature concerning the relationship between social support and health outcomes, varying by directionality, type of support, type of social partner involved, and type of outcome. Additionally, results may differ due to the stressors involved, such as caregiving, bereavement, or everyday support. The COVID pandemic presents a unique opportunity to disentangle some of these effects by examining different aspects of social support and optimal aging, but with a common stressor.

Additionally, it should be noted that previous studies rarely investigated or differentiated between provided support and received support, sources or recipients of support, and emotional and instrumental support. Social support satisfaction, especially for provided support, is an understudied construct as well. The present study focuses on whether providing support, both emotional and instrumental, can be seen as examples of older adults' productive activity and whether they are related to optimal aging, both in terms of functioning and meaning. Received support is also examined to compare it with provided support.

The first set of research questions focused on the complexity of various aspects of social support and their differential relations to health outcomes relevant to optimal aging. This study seeks to promote a hybrid model of successful and optimal aging, in that it utilizes health functions which are relevant to the first theory, but also incorporates aspects of the optimal aging model. In particular, controlling for the number of chronic illnesses and then examining factors that promote weekly functioning is a possible way of ascertaining optimal functioning despite



limitations. We are also interested in whether controlling for chronic illnesses will affect the associations between age and different aspects of social support.

The second part of the study utilized qualitative/mixed-method analyses to describe specific social support activities that the participants received and provided, stratified by age groups and gender. Receiving and providing these specific social support activities is then examined in relation with the positive outcomes in the COVID-19 pandemic.

### ***Aging, Social Support and Health Outcomes***

As illustrated in Figure 2.1, the optimal aging construct reflects the three weekly functioning variables. Controlling for the number of chronic illnesses as current limitations, we examined the relationships between age, social support, and the optimal aging construct. We conducted multiple analyses to examine different facets of social support, including source, direction, type, and aspect. However, how these variables relate with each other was examined first.

**RQ1. What are the relations among age, number of chronic illnesses, social support, and the weekly health symptoms (depressive symptoms, physical symptoms, cognitive lapses)?**

After conducting the preliminary analyses to describe the data (i.e., whether older adults during the pandemic are receiving and providing both instrumental and emotional support, and how satisfied they are with that support), we compared each of the social support variables to their counterpart (e.g., the variety of received emotional support and the variety of received instrumental support) in order to understand our sample's social support activities better. Then we turned to how these variables relate to each other, using correlation analyses. Specific

hypotheses regarding social support and health outcomes will be elaborated in the next research question.

As is well-known, physical health generally deteriorates with age (Henchoz et al., 2008; Kennedy et al., 2014) Thus, this study hypothesized that age will be positively correlated with the number of chronic illnesses, as well as weekly physical symptoms. Aging also is related with decrease in cognitive performance (Bugg et al., 2006; Salthouse, 2004; Salthouse, 2010). Therefore, we hypothesized positive correlations between age and cognitive lapses. It has been demonstrated that the positive association between older age and depressive symptoms can be reversed when controlling for confounding factors (Blazer et al., 1991; Tampubolon & Maharani, 2017). However, as this is a zero-order analysis, we expected older age to be correlated with more depressive symptoms.

As for social support, we relied on Socioemotional Selectivity Theory (Carstensen et al., 2003) and Antonucci's social convoy model (1990) and hypothesized that while the size of social network may decrease in older age, older adults are more likely to receive social support from close family members and friends. As older adults are also participants in their social support network, we hypothesized that they would provide more emotional support as they age. Nonetheless, they may provide less instrumental support as they age due to physical limitations. No hypothesis is available regarding the relationship between age and social support satisfaction due to the lack of literature.

Chronic illness is commonly accompanied by physical symptoms (Jones et al., 2004), cognitive deficits (Attree et al., 2003), and depressive symptoms (Turner & Kelly, 2000). As such, we hypothesized the number of chronic illnesses will be positively associated with physical

symptoms, cognitive lapses, and depressive symptoms. There is a lack of studies that examined the relationship between the number of chronic illnesses and social support. One study that did concluded that the number of chronic illnesses did not have any significant association with social support (Guzman et al., 2015). However, this study was with Filipino older adults in institutionalized setting, and some of them were homeless as well. As this study's sample is generally composed of well-educated White Americans, we hypothesized that the number of chronic illnesses will be correlated with more received support. As chronic conditions will hinder older adults' ability to provide instrumental support, a negative correlation was expected between the two. As older adults may try to balance out received support with providing emotional support (Boerner & Reinhardt, 2003; van Tilburg, 1998), this study hypothesized the number of chronic illnesses will be positively correlated with provided emotional support. No hypothesis is available regarding the relationship between the number of chronic illnesses and social support satisfaction due to the lack of literature.

**RQ2. Controlling for age and chronic health conditions, are the social support variables differentially associated with the health outcomes reflecting optimal/impaired aging?**

As there are many elements to consider, separate analyses were conducted to compare certain aspects of social support. To decrease the number of analyses, we first determined whether a latent variable can be constructed with depressive symptoms, physical symptoms, and cognitive lapses as indicators of optimal/impaired aging (see Pietrzak et al., 2014). Hypotheses are mostly in accordance with esteem-enhancement theory (Batson & Powell, 2003) that posits providing is better for well-being, whereas receiving may even harm one's well-being.

**RQ2.1. Are receiving and providing *emotional social support* from and to family and friends associated with the health outcomes?**

Figure 2.2 presents the analytic model for this research question. Providing support has been documented for its positive relationships to health outcomes (e.g., Ayotte et al., 2013; Stringa et al., 2020). Studies also reported positive outcomes of receiving support, when it is emotional support (e.g., Gur-Yaish et al., 2013; Stringa et al., 2020). While source and recipients of social support are critical elements in predicting health outcomes as well, the dearth of relevant empirical studies does not allow for a definite conclusion. Consequently, this study relied on Socioemotional Selectivity Theory and assumed friend support generally leads to more positive outcomes than family support, especially for instrumental support. *Therefore, this study hypothesized that received emotional support from family, received emotional support from friends, provided emotional support to family, and provided emotional support to friends will be negatively associated with health outcomes.*

As for the relations between age and social support, and chronic illnesses and social support, the previous hypotheses were addressed as follows. Older age and more chronic illnesses will be associated with more received and provided emotional support. Additionally, we hypothesized that older age will be associated with more chronic illnesses. Also, we assumed there will not be significant association between age and health outcomes after controlling for chronic illnesses.

**RQ2.2. Are receiving and providing *instrumental social support* from and to family and friends associated with the health outcomes?**

Figure 2.3 presents the analytic model for this research question. Studies have found that receiving instrumental support from family had negative outcomes even after controlling for physical functioning (e.g., Chao, 2011; Djundeva et al., 2015). In contrast to family support, receiving instrumental support from friends is hypothesized to be associated with positive outcomes. This is because instrumental support from friends in COVID-19 context may be specific to pandemic situations and thus meet respondents' need better (Sin et al., 2021). *Therefore, this study hypothesized that received instrumental support from family will be positively associated with negative health outcomes, even controlling for chronic conditions. Other received and provided instrumental support are hypothesized to be negatively associated with negative health outcomes.*

Again, this study hypothesized that older age will be associated with more chronic illnesses. Also, we assumed there will not be significant association between age and health outcomes after controlling for chronic illnesses. While older age will be positively associated with received instrumental support due to increased needs of older adults, it will be negatively associated with provided instrumental support due to physical limitations. The relations between chronic illnesses and social support follow this logic as well: more chronic illnesses will be positively associated with received instrumental support and negatively associated with provided instrumental support.

**RQ2.3. Are received support and satisfaction with received support both associated with the health outcomes?**

Figure 2.4 presents the analytic model for this research question. Satisfaction with support was more consistently reported to be associated with positive outcomes (e.g., Krause,

1987; Millán-Calenti et al., 2013) compared to mere presence of support. Therefore, this study hypothesized the satisfaction with received support will have significant positive associations with health outcomes, while presence of received support may decrease in significance in its association with health outcomes compared to previous results for RQ2.1 and RQ2.2. Following previous hypotheses, we hypothesized that received instrumental support will be positively associated with negative health outcomes, while received emotional support and satisfaction with support will be negatively associated with negative health outcomes.

Age and chronic illnesses also follow previous hypotheses. However, due to lack of previous evidence, we had no specific hypotheses for satisfaction with social support.

**RQ2.4. Are *provided support and satisfaction with provided support* both associated with the health outcomes?**

Figure 2.5 presents the analytic model for this research question. Again, satisfaction with support was more consistently reported to be associated with positive outcomes compared to mere presence of support. Therefore, this study hypothesizes that the satisfaction with provided support will have significant positive associations with health outcomes, while presence of provided support may decrease in significance in its association with health outcomes, compared to the results for RQ2.1 and RQ2.2. Other relationships follow previous hypotheses.

***Social Support and Positive Outcomes of COVID Stress***

The second set of research questions was qualitative/mixed-method and exploratory in nature. Accordingly, no specific hypotheses are provided.

RQ3. What specific social support activities do older adults receive and provide? Do these vary by age and gender? For example, older adults may be less likely provide instrumental support which involve physical labor.

RQ4. Are receiving and providing social support activities related to positive outcomes during the COVID-19 pandemic?

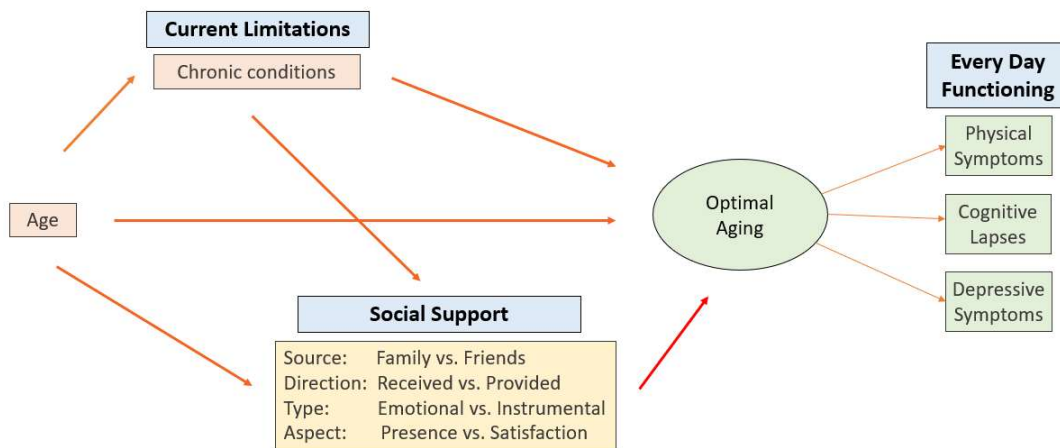
**Figure 2.1***Theoretical Model of Social Support and Optimal Aging*



Figure 2.1

*Analytic Model of Social Support and Health Outcomes I*

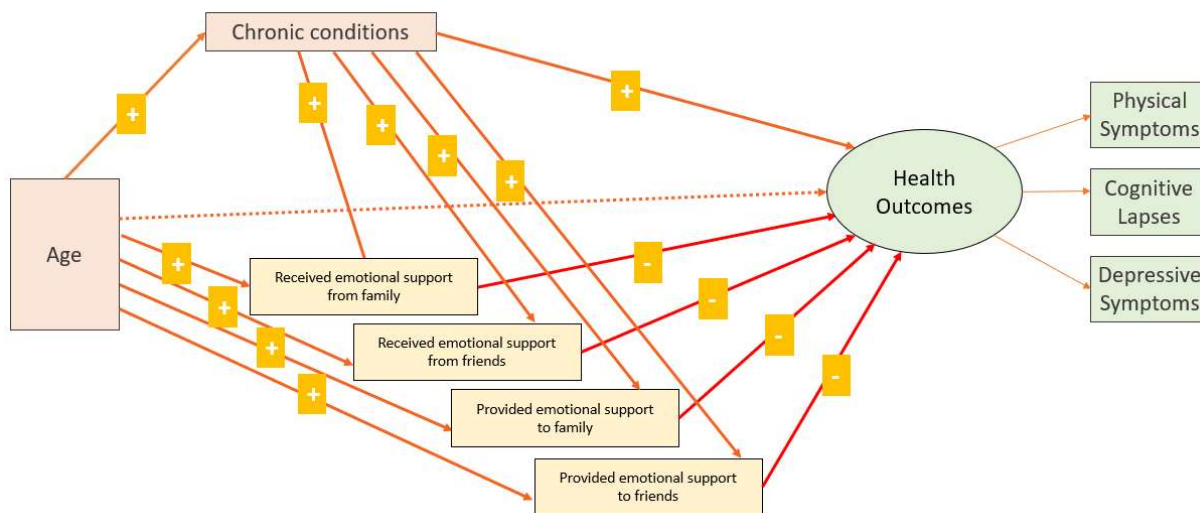


Figure 2.2

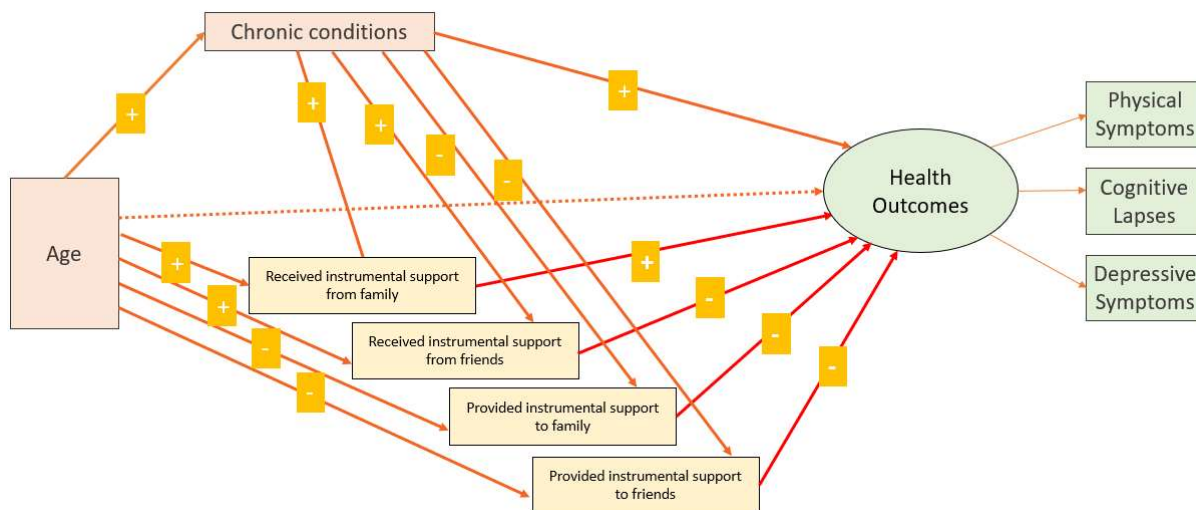
*Analytic Model of Social Support and Health Outcomes II*

Figure 2.3

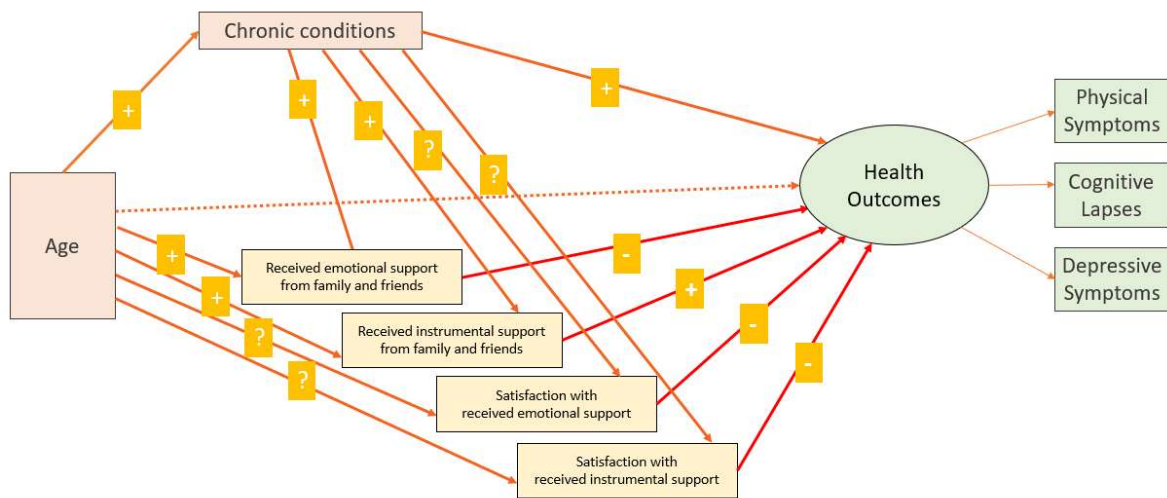
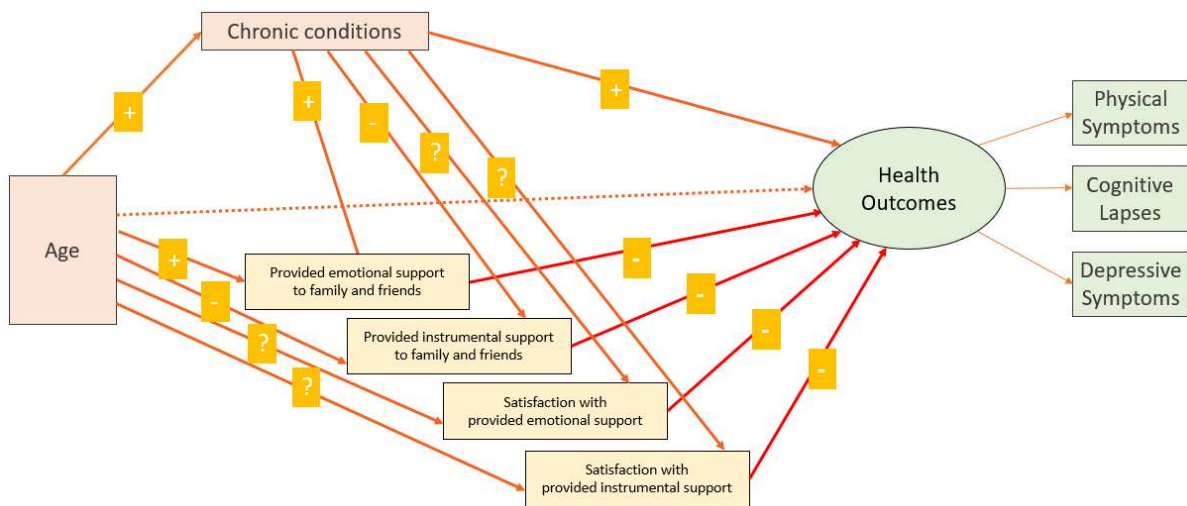
*Analytic Model of Social Support and Health Outcomes III*

Figure 2.4

*Analytic Model of Social Support and Health Outcomes IV*

## METHODS

### Sample and Procedure

We used the LIFE (Linking Individuals, Families, and Environments) Registry of the Center for Healthy Aging Research at Oregon State University to recruit participants for a study on how older adults were adapting during the COVID-19 pandemic. The LIFE Registry is composed of Oregonians who are of age 50 or older who agreed to be contacted for aging research purposes. This was a convenience sample, advertised through communities, newspaper, and websites. An email explaining the study and containing a link to the baseline online survey was sent to LIFE Registry members who had valid email addresses, which were 640 members. The members could choose to participate or not. Data were collected for eight weeks, from April 28 to June 22, with one baseline survey and seven shorter weekly surveys. For the baseline *quantitative* data, 254 (39.69%) respondents out of 640 members contacted submitted the survey, and 238 (93.70%) of the 254 participants provided at least one response for the questions of interest.

For the baseline *qualitative* data, 228 participants out of 254 participants (89.76%) made at least one response to the four open-ended questions about social support this study addresses. For the type of emotional received support, near all (216, 94.74%) participants provided responses and 208 participants (91.23%) reported on the type of instrumental received support. Most participants (217, 95.18%) also provided emotional provided support, and 190 (83.33%) provided instrumental support.

Additionally, this study utilized pre-coded data from a previous study (see Igarashi et al., 2021) regarding positive outcomes and difficulties of COVID-19 pandemic to address one of the qualitative/mixed-method research questions. This was to examine how receiving and providing

social support activities were associated with being able to find positive outcomes in this difficult situation, which we considered as an aspect of optimal aging. Of 235 participants who made at least one response to open-ended questions regarding positive outcomes and difficulties in the pandemic, 148 participants gave answers to the positive outcomes question.

## **Measures**

Measures for demographics, social support, chronic illnesses, depressive symptoms, physical symptoms, and cognitive lapses will be described in this section. See Appendix A for a copy of the survey.

### ***Demographics***

Age was obtained by asking respondents to indicate their birth year, and subtracting that from 2020, the year that the data collection took place. For gender, male was coded as 1 and female as 2.

Participants reported their education level using seven options: 1 (*less than high school diploma*), 2 (*high school graduates*), 3 (*some college credit*), 4 (*associate's degree*), 5 (*bachelor's degree*), 6 (*master's degree*), and 7 (*professional or doctorate degree*);  $M = 5.3$ ,  $SD = 1.1$ , range = 2 - 6.

Marital status was measured using six options: *married*, *civil commitment*, *cohabitating*, *never married*, *widowed*, and *separated/divorced*. As having a cohabitating partner is important for well-being, those who were married, were in a civil commitment, or were cohabitating were coded as 1; others, as 0.

### ***Chronic Illnesses***

The number of chronic health conditions was determined with the following question: “Do you have any chronic health conditions? (Check all that apply)”. This index measure was taken and modified from Kazis and colleagues (2004). For neurological problem and cancer, there was also a space to specify which type of health condition it was ( $M = 0.68$ ,  $SD = 0.80$ , range = 0–4).

### ***Social Support Network Variety and Social Support Satisfaction***

Receiving and providing emotional and instrumental support were measured with yes-no checklists that were created for this survey. Each checklist for social support has 12 boxes for social partners including *spouse, children, friend*, and the like (see Table 3.2 for the complete list). Variables on received, provided, emotional and instrumental support were created within the category of two social partners, family and friends, respectively. The former included spouse, children, grandchildren, and other family members. The latter included friends and neighbors. For example, if a participant received emotional support from spouse, children, and friends, this was coded as 2 for received family emotional support and 1 for received friend emotional support.

Table 3.3 shows the distribution of social support variables. It should be stressed that the range of numbers for social support does not indicate the amount of social support or the number of social partners. Rather, it indicates the number of types of social partners that participants engaged with concerning social support. For example, receiving support from multiple friends was scored as 1, as only one type of social partners was involved.

The average count for social support from or to family exceeded 1, indicating that participants on average received or provided social support from or to at least one type of family member. On the other hand, the average count for social support from or to friends was less than 1. This indicates that participants on average did not receive or provide social support from or to any friends in the past week.

Satisfaction with the social support received and/or provided was inquired using a five-point Likert item, 1 indicating *not at all satisfied* and 5 indicating *very satisfied*. On average, participants demonstrated high levels of satisfaction with social support, with scores for satisfaction with received emotional support, satisfaction with received instrumental support, satisfaction with provided emotional support, and satisfaction with provided instrumental support, exceeding four on a five-point scale (see Table 3.3). The sample sizes for satisfaction with social support vary as some participants did not report any social support activities with either family or friends. As the lower scores on the scale for satisfaction with social support indicate lower satisfaction and not lack of satisfaction, this lack of response was treated as missing, and not coded as zero.

For the qualitative/mixed-method data analysis, four open-ended questions were asked regarding emotional and instrumental support participants provided and received (e.g., “*Briefly describe the emotional support you received*”). There were no space limitations for these questions.

### ***Outcome Variables***

Table 3.4 shows the distribution of three dependent variables, depressive symptoms, cognitive lapses, and physical symptoms, which will form a latent variable of optimal aging.



Again, this was a very healthy sample with low scores for all three dependent variables. The skewness and kurtosis for all three variables were within the acceptable ranges, 0.95-1.66 and 1.00-2.84, respectively.

**Depressive Symptoms.** PROMIS, Depression Scale, form 6a (Pilkonis et al., 2011) was used to measure participants' depressive symptoms in the past week. Items include "*I felt worthless*" and "*I felt depressed*". Each of the six items was scored on a five-point Likert scale with 0 indicating *never* and 4 indicating *always*. The ratings for six items measuring depressive symptoms were summed ( $M = 2.30$ ,  $SD = 2.87$ , range = 0–15,  $\alpha = .84$ ).

**Cognitive Lapses.** The measure on cognitive lapses (Stewart et al., 1992) was used to measure participants' cognitive functioning in the past week. The prompt is as follows: "How much of the time during the past week did you...", and items include "*Have difficulty doing activities involving concentration and thinking?*" and "*Become confused and start several actions at a time?*".

This measure was developed for the Medical Outcome Study (Stewart et al., 1992) based on the Sickness Impact Profile (Bergner et al., 1981) to assess daily cognitive problems that were less severe, compared to severe impairment which was assessed by a clinician. In the original study, internal consistency reliability was reported to be .87. Other studies reported its Chronbach's alpha to be .91 (Sargent et al., 2020) and .93 (Nichter et al., 2019).

Each of the six items was scored on a six-point Likert scale with 0 indicating *none of the time* and 5 indicating *all of the time*. The ratings for six items were summed ( $M = 2.08$ ,  $SD = 2.18$ , range = 0-10,  $\alpha = .77$ ).

**Physical Symptoms.** The number of physical symptoms was determined by the following question: “In the past 7 days, did you experience any of the following physical symptoms? (Check all that apply). There were 17 options including headache, constipation/diarrhea, muscle soreness, hot or cold flashes, poor appetite, congestion, sore throat, dizziness, cough, and none ( $M = 3.19$ ,  $SD = 2.37$ , range = 0–12). The list of physical symptoms was taken from Larsen and Kasimatis (1991).

**Positive Outcomes.** Any perceived positive outcomes from the COVID-19 pandemic were solicited using an open-ended question: “During the past week, did anything positive come about because of the COVID-19 situation? If yes, explain.” There was no space limitation for this question.

### **Measurement Model**

The first step of structural equation modeling [SEM] is to identify a measurement model. There are two ways of identifying a measurement model, confirmatory factor analysis [CFA] and exploratory factor analysis [EFA]. The former tests a factor structure decided by the researcher informed by theory and literature, and the latter seeks to identify the factor structure unknown by the researcher (Ullman, 2006). In other words, CFA is theory-driven and EFA is data-driven.

Theoretically, depressive symptoms, cognitive lapses, and physical symptoms could form a latent variable indicating general health function, as a proxy for optimal aging. It also has been demonstrated that physical health, emotional/mental health, and cognitive health contribute to a latent successful aging factor (e.g., Parslow et al., 2011; Pietrzak et al., 2014). The three dependent variables were all significantly correlated together as well, above the value of .30: depressive symptoms and cognitive lapses,  $r(235) = 0.46$ ,  $p < .001$ ; depressive symptoms and

physical symptoms,  $r(235) = 0.39, p < .001$ ; and cognitive lapses and physical symptoms,  $r(236) = 0.37, p < .001$ . However, testing the fit of the measurement model by CFA was not possible as CFA with one latent factor and three indicator variables produced a saturated model. This is because the number of to-be-estimated parameters are equal to the number of known parameters, indicating a just-fit model.

Therefore, we decided to use exploratory factor analysis [EFA] to see if the three dependent variables would form a latent factor. We chose to conduct parallel analysis as it is considered to be the better alternative in deciding the number of factors to extract than scree test (Cattell, 1966) or than comparing eigenvalues to the value of 1.0 (Guttman, 1954) (Hayton et al., 2004; Iacobucci et al., 2022). This method is based on the assumption that the eigenvalues from observed dataset with substantial factor structure should be larger than those derived from random data with same sample size and number of variables (Humphreys & Montanelli, 1975). Parallel analysis resulted in a single factor (see Figure 3.1), the eigenvalue from the observed data surpassing the eigenvalue from simulated data when the number of retained factor was one. This single factor had an eigenvalue of 1.06, indicating that this factor explained more variance than a single observed variable. Factor loadings were all above the value of .50, acceptable (see Table 3.5). There are varied recommendations on the cut-off value for communalities (Eaton et al., 2019). For this study, we employed the cut-off value of .30, which means the extracted factor does not explain 70% of the variance of the individual indicator.

### **Sample Characteristics**

Table 3.1 provides information on sample characteristics for the quantitative study. Participants' age ranged from early 50s to mid-90s, with the average age being 71 years old.

Participants were largely female (73.11%), retired (67.51%), and married or residing with a partner (73.28%). Participants were dominantly White (96.55%) and highly educated, with nearly half (45.79%) holding a post-graduate degree. This was a healthy sample: the average number of chronic illnesses was less than one (0.68), and the total number of individual chronic illnesses ranged from zero to four out of the possible range of zero to eight. In all, we had a highly privileged sample.

The qualitative sample consisted of 228 older adults whose age ranged from 51 to 95 ( $M = 71.25$ ,  $SD = 7.34$ ). The sample was largely female (74.56%) and White (97.29%). Again, nearly half of the sample had a post-graduate degree (46.05%). Most respondents were retired and not working at the time of the survey (68.58%), but 14.16% worked part-time, and 10.64% full-time. Most respondents were married (73.42%), 12.61% were widowed, 9.91% divorced or separated, and 4.05% were single.

The characteristics of the sample for the pre-coded data were similar as well. Their age ranged from 51 to 95 ( $M = 71.4$ ,  $SD = 7.4$ ). They were largely female (73.6%) and White (92.1%), with nearly half of the sample (47%) having a post-graduate degree. Most respondents were retired (70.8%) and married (73.4%).

## **Analyses**

All quantitative analyses were conducted with SAS OnDemand for Academics (SAS Institute Inc., Cary, NC, USA). Qualitative data was managed using ATLAS.ti version 22 (ATLAS.ti Scientific Software Development GmbH, Berlin, Germany).

## ***Ageing, Social Support and Health Outcomes***

The main analyses are organized around the respective hypotheses.

RQ1. What are the relations among age, number of chronic illnesses, social support, and the weekly health symptoms (depressive symptoms, physical symptoms, cognitive lapses)?

First, a series of paired *t*-tests were performed to compare comparable social support variables. For example, we examined whether satisfaction with received emotional support was greater than satisfaction with received instrumental support.

Pearson correlation analyses were conducted to ascertain associations between variables for RQ1. As there were 20 variables in total (i.e., age, chronic illness, three covariates, twelve social support variables, and three health outcomes), this resulted in 190 analyses. Thus, we decided to use Bonferroni-Holm adjustment to correct for the multiple testing problem. This method is considered to be less conservative, but more powerful than the classic Bonferroni correction (Lesack & Naugler, 2011; Strassburger & Bretz, 2008).

RQ2. Controlling for age and chronic health conditions, are the social support variables differentially associated with the health outcomes reflecting optimal/impaired aging?

SEM was used to estimate the regression paths between the variables of interest. Compared to regression analyses, SEM is particularly useful in that it can estimate interrelationships between predictor factors and permits predictor factors to load on multiple factors (Parslow et al., 2011). Additionally, it allows to identify a latent factor from observed variables, which can account for measurement errors (Savalei, 2019). This is possible because measurement models introduce error terms into the equation, assuming that there is discrepancy between what was intended to be measured and what was actually measured. As the measurement model was prepared with EFA, the structural part of the model was left to test. It should be noted that one factor loading for the optimal aging variable needs to be fixed. This is

due to the scale indeterminacy problem: latent variables do not have established unit of measurement. Fixing a factor loading of a certain indicator variable to 1 sets the unit of measurement of that latent variable (O'Rourke & Hatcher, 2013). The decision of which factor loading should be chosen was informed by the results of EFA. As the depressive symptoms had the largest loading for the optimal aging factor, its factor loading was fixed to 1 in SEM. After performing the analyses, the goodness-of-fit indices, such as the chi-square test, Comparative Fit Index [CFI], Root Mean Square Error of Approximation [RMSEA], and Standardized Root Mean Square Residual [SRMR] were reviewed. Even when the model fit was acceptable, nonsignificant paths were trimmed in order to establish more parsimonious models.

Age was included in the models to examine the age differences in the results. The number of chronic illnesses was included as an indicator of current limitations in the optimal aging framework. All social support measures were included initially, even if they did not significantly correlate with the outcome variables, in order to test if there would be uncovering effects. As for covariates, gender and marital status were included. Education level was excluded as it did not show significant relations with any of the social support variables and outcome variables.

All SEM models share the same structure shown in Figure 3.2. First, latent factor of aging is composed of weekly health symptoms, namely, depressive symptoms, cognitive lapses, and physical symptoms. Age is entered as the only exogeneous variable of interest that is associated with chronic illnesses, all social support variables, and the latent factor of optimal aging. Excluding the association with age, chronic illnesses are associated with all social support variables and the latent factor of optimal aging. Again, excluding the other associations mentioned above, all social support variables are associated with the latent factor of optimal

aging. While not shown in the figure, the errors of social support variables are allowed to covary with the errors of other social support variables they significantly correlate with. Covariates are not shown in the figure. However, they are associated with every endogenous variable through regression paths and are allowed to covary with every exogenous variable.

The only differences between the models concern which social support variables are entered in the question. For example, model I included received and provided emotional support from and to family and friends; model III included received emotional and instrumental support and satisfaction with received emotional and instrumental support.

### ***Social Support and Positive Outcomes of COVID Stress***

The purpose of the qualitative/mixed-method section of the paper was to examine what specific social support activities older adults provided and received during the COVID pandemic and whether these vary by age and gender. We also explored if the variety of received and provided emotional/instrumental support was associated with the variety of positive outcomes. Content analysis was conducted to analyze qualitative data (Bengtsson, 2016).

**Coding Procedure.** The possibility of using pre-existing coding schemes was contemplated, such as Cutrona and Suhr's (1992) Social Support Behavior Code [SSBC]. This coding scheme allows for coding a variety of support behaviors including emotional support (relationship, physical affection, confidentiality, sympathy, understanding and empathy, prayer, expresses concern, and reassurance), esteem support (compliment, validation, relief of blame), and instrumental support (loan, direct task, indirect task, active participation, willingness, and complies with request). However, we decided against using this extant scheme, mainly for two reasons. First, this coding scheme was too broad for the open coding procedure, as we aimed to

describe and illustrate older adults' support behaviors as specifically as possible. Second, as we consolidated the codes, it became apparent that the manifest scheme will not be very similar with Cutrona and Suhr's.

Thus, open coding without pre-determined coding schemes was conducted by the author, a Korean national, an American doctoral candidate, and a senior Asian American researcher, and a senior American researcher. All coders were women.

Most of the time, one code was assigned for one activity, resulting in multiple codes for responses that included more than one activity. Quotes were moved to a different section only when it was clear that the activity stated did not belong to the original section. For example, some participants described emotional support for instrumental support questions.

Preliminary codes were initially grouped by the author, and then were consolidated further through group discussion. Inter-coder agreement [ICA] in Krippendorff's alpha was computed using ATLAS.ti 22. According to Krippendorff (2019), reliability of 0.80 or greater is acceptable, while tentative conclusions can be drawn for data within the reliability range of 0.667 and 0.80. Disagreement on coding were discussed and resolved, resulting in final coded data.

It should be noted that there were responses that indicated no support was received or provided. We treated these cases as *none* (for those who indicated they had not received or provided any support or who did not respond to said question but did respond to any of the rest three questions) or *not valid* (for those who provided answers that were not codable as social support) responses. These cases were excluded from analyses and were not included in calculating ICA even if the coders agreed they were *none/not-valid* responses.



**Analyses by Research Questions.** First, the coded responses were examined by age groups, middle-aged (51-64), young-old (65-74), and old-old (75-95); and gender, males and females. The middle-aged constituted 14.47% of the sample; the young-old, 57.89%; and the old-old, 26.75%. Males constituted 25.44% of the sample, and females, the rest. Second, we conducted hierarchical regression analysis to examine the association between the variety of social support activities received and provided and the variety of positive outcomes found in the COVID-19 pandemic. For comparison purpose, corresponding social support network variables from the quantitative data were included as well: received and provided emotional and instrumental support.

Analyzing age as a categorical variable as opposed to continuous variable as for the quantitative analyses has two reasons. First, it is not possible or meaningful to treat age as a continuous variable in qualitative analyses. Second, contrary to the quantitative research questions which address how aging is associated with other variables, this qualitative/mixed-method question is more about data description – that is, the identification of patterns in the data. Whereas examining social support behaviors by two or three age groups may be less precise than exploring age differences in quantitative analyses, it nonetheless provided us with rich description of what our respondents were actually doing, complementing the quantitative results.

**Positive Outcomes Data.** The pre-coded data from a previous study (Igarashi et al., 2021) followed the above procedures as well. However, the open coding was conducted in a group of six researchers, of which two were Americans, two were Asian Americans, and the other two were Korean nationals, all women. ICA was obtained by the author and the first author of the study. The positive outcomes from the COVID-19 pandemic had 75 open codes, including

“able to slow down”, “bittersweet”, “feeling hopeful for the planet”, and “not having to go out”. These were consolidated into 12 final codes, including “keeping busy”, “sense of community”, and “improving environment”. The codes were then categorized by three socioecological levels, which were personal, interpersonal, and societal, as presented in Table 3.2. The number of the consolidated codes were examined in relation to the number of consolidated codes of received/provided emotional/instrumental support using hierarchical regression analyses.

**Table 3.1**

*Sample Characteristics for Quantitative Study (N=238) and Qualitative/mixed-method Study*

	Quantitative sample		Qualitative sample	
	Mean (SD, range)	Count (Valid %)	Mean (SD, range)	Count (Valid %)
Age	71.20 (7.32, 51-95)		71.25 (7.34, 51-95)	
Gender (female)		174 (73.11)		170 (74.56)
Race (White)		224 (96.55)		215 (97.29)
Education				
Bachelor's degree or less		129 (54.21)		123 (53.95)
Post-graduate degree		109 (45.79)		105 (46.05)
Employment (retired)		160 (67.51)		155 (68.58)
Marital status				
Married or partnered		170 (73.28)		163 (73.42)
Other		62 (26.72)		59 (26.58)
Chronic illnesses	0.68(0.80, 0-4)		0.68 (0.80, 0-4)	

(N=228)

*Note.* Sample sizes vary slightly due to missing data.

**Table 3.2***Positive Outcomes from COVID-19 by Socioecological Levels (n = 148)*

Codes (n = 148)	n (%)
<i>Personal</i>	
Keeping busy	36 (24.3)
Freedom of simplicity	22 (14.9)
Doing something new	20 (13.5)
Health and wellness	15 (10.1)
Increasing self-awareness	15 (10.1)
Experiencing gratitude and appreciation	13 (8.8)
Financial benefits	8 (5.4)
Happy to stay home	6 (4.1)
<i>Interpersonal</i>	
Valuing time with family and friends	41 (27.7)
Sense of community	38 (25.7)
<i>Societal</i>	
Social optimism	16 (10.8)
Improving environment	11 (7.4)

*Note.* Codes and figures are from Igarashi et al. (2021).

**Table 3.3***Distribution of Social Support Network Size by Type and Social Support Satisfaction (N=236)*

	Mean (SD)	Possible range
Received emotional support (total)	2.39 (1.69)	0-6
Family	1.59 (1.23)	0-4
Friends	0.80 (0.79)	0-2
Received instrumental support (total)	1.39 (1.12)	0-6
Family	1.06 (0.90)	0-4
Friends	0.33 (0.60)	0-2
Provided emotional support (total)	2.74 (1.67)	0-6
Family	1.87 (1.24)	0-4
Friends	0.87 (0.79)	0-2
Provided instrumental support (total)	1.43 (1.29)	0-6
Family	1.07 (0.97)	0-4
Friends	0.36 (0.64)	0-2
Satisfaction with received emotional support	4.67 (0.58)	1-5
Satisfaction with provided emotional support	4.39 (0.74)	1-5
Satisfaction with received instrumental support	4.82 (0.47)	1-5
Satisfaction with provided instrumental support	4.45 (0.84)	1-5

*Note.* The sample size varies for satisfaction with support: received emotional support ( $n=220$ ), received instrumental support ( $n=208$ ), provided emotional support ( $n=231$ ), and provided instrumental support ( $n=196$ ).

**Table 3.4***Distribution of Outcome Variables (N=238)*

	Mean (SD)	Skewness	Kurtosis	Range (Possible range)
Depressive symptoms	2.30 (2.87)	1.66	2.84	0-15 (0-24)
Cognitive lapses	2.08 (2.18)	1.47	2.11	0-10 (0-24)
Physical symptoms	3.19 (2.37)	0.95	1.00	0-12 (0-16)

*Note.* Sample sizes vary slightly due to missing data.

**Table 3.5**

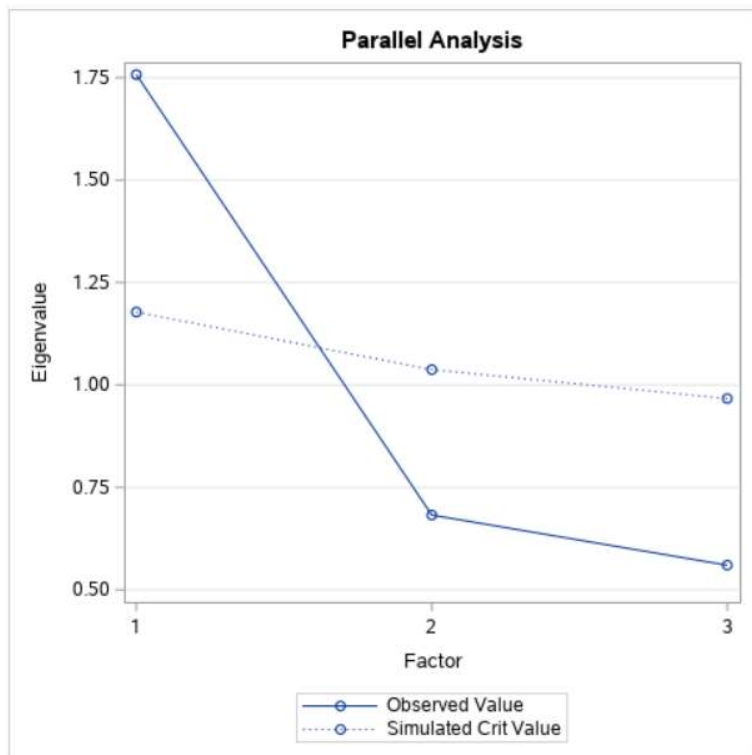
*Result of Exploratory Factor Analysis for the Latent Factor (n=237)*

	Factor loadings	Communalities
Depressive symptoms	.63	.39
Cognitive lapses	.61	.37
Physical symptoms	.54	.30

*Note.* A single factor had an eigenvalue of 1.06. Parallel analysis was used for extraction.

**Figure 3.1**

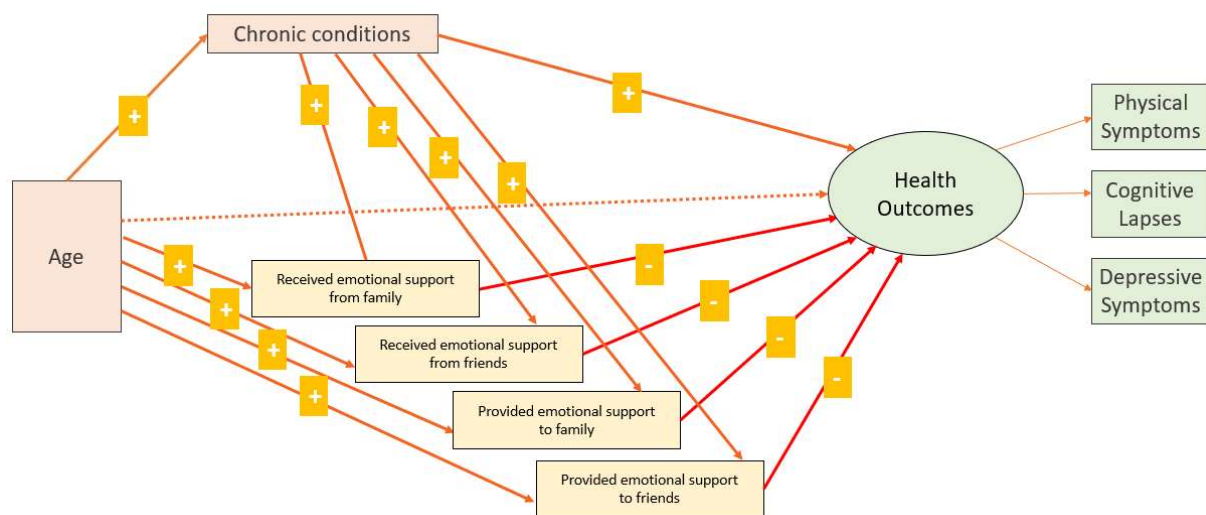
*Plot for Parallel Analysis (n=237)*





**Figure 3.2**

*Example of an Analytic Model of Social Support and Health Outcomes*



## RESULTS

### **Aging, Social Support, and Health Outcomes**

In this section, we will present the results ordered by the research questions, which include groups of hypotheses.

#### ***Research Question #1: Demographic Characteristics, Social Support, and Health Outcomes***

The first research question addressed the relations among demographics, social support, and the health outcomes of depressive symptoms, physical symptoms, and cognitive lapses (see Table 4.1 to 4.4).

**Comparison of Social Support Variables.** First, we performed a series of paired *t*-tests to examine the relative use of different types of social support across sources of support. Table 4.1 presents the differences in received versus provided support within family and friends (horizontal), as well as the differences between emotional and instrumental support for received and provided support, nested within family and friends (vertical). The first line of the table indicates that within families, they provided more emotional support than they received. However, within friends, there were no differences. Additionally, there were no such differences in instrumental support for either family or friends. Looking down the columns, older adults reported receiving and providing more emotional support than instrumental support for both family and friends.

In order to compare the variety of family social support network and friend social support network, we converted the score for friend social support to match the scale for family social support network. As the minimum score for both friend social support and family social support was 0, we multiplied by 2 the scores for friend social support so that its maximum score, 2,

would match the maximum score of family social support, which was 4. Table 4.2 shows that participants received and provided emotional social support in comparable levels with family and friends, but that they received and provided more instrumental support from and to family than from and to friends.

Participants were generally satisfied with the social support they received and provided. However, Table 4.3 shows that they were significantly more satisfied with the social support they received for both emotional support and instrumental support than the social support they provided. Satisfaction with received emotional support was significantly lower than satisfaction with received instrumental support, but there was non-significant difference for satisfaction with provided support between emotional and instrumental support.

### **Correlations Between Demographics, Social Support, and Health Outcomes.**

Correlation analysis results will be presented in the order of demographic variables, social support variables, and health outcome variables, first examining the correlations within the same groups of variables, and then with the rest of the variables of interest.

*Demographic Variables.* Surprisingly, neither older age nor higher education was shown to be significantly correlated with any of the variables. Being female was positively and significantly correlated with received and provided emotional support from and to friends, but this significant correlation was not shown for friend instrumental support, family support, or health outcomes.

Marital status had significant correlations with social support variables, but not with health outcomes. Being married was positively correlated with family support participants received and provided. Given that 70% of the sample was married, it is not surprising that

marital status was significantly correlated with both receiving and providing instrumental and emotional support from family members (often spouses). Married status was uncorrelated with all received and provided support from and to friends.

***Chronic Illnesses.*** The chronic illness variable was used as a proxy for limitations in the optimal aging model. We had hypothesized that having chronic illnesses will be (1) positively correlated with received support, (2) negatively correlated with provided instrumental support, and (3) positively correlated with provided emotional support. However, non-significant correlations were found between chronic illnesses and social support variables (see Table 4.4). We had also hypothesized that chronic illnesses would be positively correlated with all health outcomes (i.e., depressive symptoms, cognitive lapses, and physical symptoms). However, chronic illnesses were only significantly correlated with physical symptoms.

***Social Support Variables.*** There were no hypotheses regarding the relationships among the social support variables. Social support network variety variables were mostly correlated with each other, especially in terms of recipients and sources (see Table 4.4, columns 6-12 and rows 7-13). For example, receiving any kind of family support was correlated with providing family support, whether emotional or instrumental. It is also not surprising that instrumental and emotional support within each social partner category also tended to be highly correlated. However, fewer significant correlations were found between family and friend indicators of support, and they tended to be only weakly associated (see Table 4.4, columns 6-12 and rows 7-13), suggesting that family and friend indicators of support were largely independent. For example, provided instrumental support to friends had non-significant correlations with all family social support variables.

Further, the social network variety variables were uncorrelated with the satisfaction with support variables. On the other hand, the satisfaction with social support variables were all significantly correlated with each other, ranging from .33 to .58. The correlation between satisfaction with received instrumental support and satisfaction with provided emotional support was the only exception, which was non-significant.

The social network variables were uncorrelated with the health outcomes. In contrast, nearly all the satisfaction with support variables had significant negative associations with the depressive symptoms and cognitive lapses (-.27 to -.34). Physical symptoms, on the other hand, was only significantly correlated with satisfaction with received emotional support.

### ***Research Question #2: Social Support and Health Outcomes***

The next section will address the structural equation models testing the hypotheses about whether the various types of social support variables are related to health outcomes. Age and chronic illnesses were included in the model as variables of interest. Age was critical in investigating its role in both social support and health outcomes; the presence of chronic illnesses was included as the current limitations of the participants. Among the demographic characteristics, education was excluded from the model as it was shown to be uncorrelated with any of the social support and outcome variables. Further, the correlation matrix indicated that many of the social support variables were correlated, so we let their error terms covary in our models.

**Received and Provided Emotional Support.** The first research question concerned the associations between received and provided emotional support and optimal aging, represented by the latent factor of weekly health outcomes. This base model (Table 4.5), including all variables,

showed acceptable model fit,  $\chi^2(16, n=238) = 29.60, p < .05$ ; CFI = .98; RMSEA = .06; SRMR = .04. However, only two of the paths were significant for the base model: the number of chronic illnesses was positively associated with provided emotional support to friends, and health outcomes.

More importantly, none of the social support variables (i.e., received emotional support from family, received emotional support from friends, provided emotional support to family, and provided emotional support to friends) was significantly associated with the health outcomes.

However, as most of the paths were nonsignificant, we decided to trim the nonsignificant paths to make a more parsimonious model. This resulted in the modified model (see Table 4.6), which also indicated acceptable model fit,  $\chi^2(25, n=238) = 9.23, p > .05$ ; CFI = .98; RMSEA = .04; SRMR = .05. Additionally, Akaike information criterion [AIC] and Schwarz Bayesian information criterion [BIC] showed decrease from the base model, AIC = 8184.54; BIC = 8358.15; to the modified model, AIC = 6565.75; BIC = 6669.92. Figure 4.1 presents the structure of the final model. The paths between chronic illnesses and provided emotional support to friends, and between chronic illnesses and health outcomes stayed significant.

**Received and Provided Instrumental Support.** The second research question concerned associations between received and provided instrumental support and health outcomes. The model fit indices for this base model were mostly acceptable,  $\chi^2(19, n=238) = 50.10, p < .001$ ; CFI = .92; RMSEA = .08; SRMR = .05 (Table 4.7). Once again, only a few paths were significant for the base model. The path between chronic illnesses and health outcomes remained significant. Additionally, it was shown that older age is associated with more received instrumental support from family.

None of the social support variables (i.e., received instrumental support from family, received instrumental support from friends, provided instrumental support to family, and provided instrumental support to friends) was significantly associated with the health outcomes.

However, this model consisted of several nonsignificant paths, and its fit to the data could be improved. We modified the base model by trimming the nonsignificant paths. The modified model (see Table 4.8) showed acceptable fit indices,  $\chi^2(30, n=238) = 55.72, p < .01$ ; CFI = .92; RMSEA = .06; SRMR = .06. Again, AIC and BIC showed decrease (base model: AIC = 7908.12; BIC = 8071.31; modified model: AIC = 7455.42; BIC = 7542.23.). Trimming the nonsignificant results increased the significance of age's effect on received instrumental support from family to .001 level. See Figure 4.2 for the final model. The two paths, one between age and received instrumental support from family, and the other between chronic illnesses and health outcomes, stayed significant.

**Received Support and Satisfaction with Received Support.** The third research question concerned associations between received emotional and instrumental support, satisfaction with received emotional and instrumental support, and health outcomes. The base model showed acceptable model fit indices,  $\chi^2(20, n=238) = 32.73, p < .05$ ; CFI = .96; RMSEA = .05; SRMR = .03 (Table 4.9). Again, only a few paths were significant for the base model. The path between chronic illnesses and health outcomes remained significant.

There were no associations between social support network variety variables and health outcomes, which was consistent from the previous models. However, both satisfaction with received emotional support and satisfaction with received instrumental support had significant negative associations with the latent variable of optimal aging.

We trimmed non-significant paths to obtain a more parsimonious model. This resulted in the modified model (see Table 4.10), fit indices of which indicated the acceptable fit to the data,  $\chi^2(26, n=238) = 33.20, p > .10$ ; CFI = .97; RMSEA = .03; SRMR = .04. Again, both AIC and BIC showed decrease in the modified model from the base model (AIC = 8114.56 to 6497.83, BIC = 8274.28 to 6598.53). Figure 4.3 presents the final model. The paths between chronic illnesses and health outcomes, satisfaction with received emotional support and health outcomes, and satisfaction with received instrumental support and health outcomes stayed significant.

**Provided Support and Satisfaction with Provided Support.** The last research question concerned associations between provided emotional and instrumental support, satisfaction with provided emotional and instrumental support, and health outcomes.

Table 4.11 shows all paths for the base model, which had an acceptable model fit,  $\chi^2(20, n=238) = 36.66, p < .05$ ; CFI = .96; RMSEA = .06; SRMR = .04. The path between chronic illnesses and health outcomes remained significant. Additionally, older age had significant negative associations with both provided instrumental support and satisfaction with provided instrumental support, while the former was marginal in significance. Age had marginal, but direct negative effect on health outcomes, even though it was canceled out by positive indirect association between age and health outcomes.

The association between provided emotional support to friends and family and health outcomes, and the association between provided instrumental support and health outcomes stayed nonsignificant. However, satisfaction with provided emotional support and satisfaction with provided instrumental support were significantly negatively associated with health outcomes.



Again, we chose to trim all nonsignificant paths. This resulted in a modified model (see Table 4.12), which also showed acceptable model fit indices,  $\chi^2(30, n=238) = 46.86, p < .05$ ; CFI = .96; RMSEA = .05; SRMR = .05. AIC and BIC showed slight decrease (base model: AIC = 8423.06; BIC = 8582.78; modified model: AIC = 8413.26; BIC = 8538.26). As presented in Figure 4.4, all remaining paths stayed significant. Additionally, trimming the nonsignificant results increased the significance of age's effect on providing instrumental support to family to .01 level.

### **Qualitative Social Support and Positive Outcomes of COVID Stress**

We coded four open-ended survey questions, concerning received and provided emotional and instrumental support. Clearly, social support was important to this sample. More than 70% of the sample provided valid responses excluding the participants who reported that they did not receive or provide said support. For received emotional (RE) support, the valid response rate was 88.16% of 228 participants, for provided emotional (PE) support, it was 91.23%. Numbers were lower for instrumental support: for received instrumental (RI) support, it was 82.02%, and for provided instrumental (PI) support, 72.81%. Interestingly, sometimes the support was COVID-19-specific, that is, people mentioned checking in with neighbors to see if they needed supplies, or reporting providing mutual support such as discussing the adverse impacts of the COVID-19 pandemic. At other times, however, respondents just mentioned more general support, such as cooking, cleaning, and yardwork, which seemed to be more associated with the general maintenance of social ties.

### ***Coding Results***

Before discussing the analyses for the research questions, we will describe the open and consolidated coding results, organized by type of support. Please note that the open codes are presented in Appendix Table B1 and B2; the preliminary consolidated codes in Appendix Table B3-B6, and the final codes in Table 4.13 and Table 4.14.

Open codes were developed in a group coding situation. The author developed initial code consolidation, which was then discussed in the group. In this process, we determined that many of the open codes were quite similar across received and provided support. Thus, we tried to have the final consolidated codes be as parallel as possible for received and provided emotional support, as well for received and provided instrumental support. Finally, we conducted intercoder agreement (ICA) analyses for the final consolidated codes.

**Emotional Support.** In this section, we will discuss the open and consolidated codes for emotional support, both received and provided. A total of 201 (88.16%) individuals provided valid information for *received emotional support*. The initial group coding resulted in 152 open codes (see Table B1). Participants reported receiving emotional support from a variety of sources, including family, friends, and pets, as well as from professional personnel. The reported support included checking in, sharing frustration, and commiserating. The initial consolidation by the author produced 29 codes (see Table B2). For example, one code was named *nurturing actions and attitudes*, and included sympathizing, being supportive, and comforting. As such, most codes were grouped according to the content of support. However, there were three exceptions. The codes *pets* and *professional help* concerned the *source* of support, while the code

*ICT* (information and communication technology) indicated the *medium* of support (e.g., celebration over Zoom, group-texting, and support from Zoom support group).

For *provided emotional support*, a total of 208 (91.23%) individuals provided valid information. The initial group coding resulted in 202 open codes (see Table B1). Participants provided emotional support to various members of their social network, including their family, friends, and neighbors. Numerous activities of social support were reported, such as listening to concerns, kissing, and raising hopes. The author grouped these into 35 initial consolidated codes (see Table B2). As we started coding for emotional support from provided support, the initial consolidated codes were rather literal in nature. For example, the code *comforting* only consisted of the open codes that explicitly included the word comfort or console. The codes *pets* or *professional help* did not appear in this section, but the code *media communication* did under the broad code of *communicating/interacting*, which included not only online interactions but also phone calls at this time.

We then examined the initial consolidation from both the RE and PE to develop the final consolidated codes. For comparison's sake, it made sense to have parallel codes. However, RE had two more codes because of pet support and professional support which did not appear in PE. To determine the reliability of the codes, we conducted inter-coder agreement (ICA) analyses, but the initial ratings were not in the acceptable range. We discussed what resulted in the different understanding of the codes, most of which pertained to identifying if the quotes indicated support for distress or were just pleasant interactions between people. Re-coding was conducted twice for both RE and PE support. The final ICA results were .72 for RE and 0.81 for PE support. While the former did not reach the standard criterion of 0.80, Krippendorff (2019)

stated that a tentative conclusion can be made when ICA is equal or greater than 0.667. Thus, we decided to proceed to resolution of disagreements and determine the final codes for the data.

***Final Consolidated Codes for Emotional Support.*** The final consolidated codes for emotional support and their frequencies are presented in Table 4.13. The code *interpersonal responses to distress* indicates the social support received or provided was a response to distress without clear use of specific coping strategies. Examples of this category include listening, comforting, and sympathizing: “listened to me while I vented. The stress of world events doesn't seem to bother me, then all of a sudden I'm crying” (ID 4, female, age 68).

The code *promoting social ties through positive interactions* indicates the pleasant interpersonal activities that were to promote the recipient's well-being and consequently the relationship between the provider and recipient, which took place in situations without clear signs of distress. Examples of this category include affection, checking in, entertainment, and use of humor without context of distress: “with my children and a friend, it wasn't emotional support — more like checking in to see how I was doing, and I have been lucky in that I haven't been worried or afraid or depressed, etc.” (ID 57, female, age 70).

The code *reciprocal support* was used in instances when the social support activities, received or provided, seemed rather reciprocal in nature. For example, sometimes participants responded that they “shared” stories or “discussed” some matters, indicating the conversation was something more than unidirectional “listening” or “talking”. It should be noted that “listening” *and* “talking” were also coded as reciprocal support when they were listed together, implying that it was not just “listening” *or* “talking”. A more complex example of this could be a female participant commenting that she received emotional support from a neighbor: “I do have

a neighbor who is very sociable and this has been hard for her and so I can gripe about my somewhat dis[sic]functional, but nice niece who lives with me” (ID 24, female, age 78). The context implied that she was socializing to benefit the neighbor, and thus this case was coded as *reciprocal support*.

The code *helping to cope* was chosen when the support provider helped the recipient using specific coping strategies, including emotion processing, problem solving, or humor. For example, one participant indicated that she provided support with “processing feelings about what's happening” (ID 9, female, age 79). While advice has its separate category, some quotes mentioning advice were also coded as this category because there was context of distress, implying advice was used to help people cope: “listening to their 'day' and how they are dealing with challenges. Giving positive feedback and making suggestions (when asked) about how to deal with a situation. Reminding them I'm here and facing similar things...” (ID 145, female, age 66).

All quotes in the answer for the emotional support that included the act of receiving or providing information or advice were coded as *information and advice* unless there was additional information or context of distress. For example, “encouragement and advice about various situations, especially for our friends in Bergamo, Italy where the corona virus has been very difficult” (ID 206, female, age 73) was coded in this category. We respected participants’ decision that whether the information or advice received or provided pertained to emotional support or instrumental support.

If the social support recipient had some source of social support available, such as social network or offers of support, we coded the quote as *perceived availability to/of support*. For

example, in a quote “listening to them, when I asked how they were and if they needed anything” (ID 223, female, age 76), we decided that “if they needed anything” warranted this category. The quote “daughter and family live near Corvallis; extended family also available; good friend network both locally and distant” (ID 9, female, age 79) did not discuss any active support, but implied the social network available to the participant.

The code *media communication* pertains to every act of social support that involved using more current forms of technology, such as texting, emails, and Zoom. As this code concerns the medium of social support rather than its content, this code was frequently double-coded with other categories that described the content of social support. One participant responded, “Part of a large family spread across the US. We do socially distant family zoom calls about weekly! About 39 join, including 3 generations” (ID 131, female, age 70). This was double-coded as *media communication* and *promoting social ties through positive interactions*.

Sometimes participants mentioned relying on religious or spiritual power for support. This kind of support was coded as *religious/spiritual support*. For instance, a participant responded, “this morning I was just encouraging them in their Christian faith and to take this bad situation and turn it to opportunity for good” (ID 181, female, 61).

The code *pets* only exists in the received emotional support section, as participants did not perceive they were providing emotional support to their pets. This code concerns the source of the social support and includes every type of emotional support activity participants received from their pets, such as “pet is there for physical contact whenever needed and gets me outside to interact with the world in a positive way” (ID 126, female, age 60). Quotes such as “petting dog is a stress reliever. Knowing he depends on me helps me keep on track taking care of him and

myself” (ID 32, female, age 80) implied that the social support received from pets may be qualitatively different from that received from other human beings.

The code *professional help* only exists in the received emotional support section and not in provided emotional support section as participants did not report providing emotional support to professional personnel. Many participants reported getting help from their therapists: “scheduled video appointment with mental health counselor” (ID 106, male, age 71).

Responses that indicated that no support was received or provided were categorized as *none/not-valid*. These responses were not included in the analysis. There were no cases that were coded as unspecified support in the instrumental support section.

***Frequency for Emotional Support Codes.*** The number of any coded support was 357 (156.58%) for received support, lower than the number for provided support, 375 (164.47%). The number of none/not-valid cases were greater for received support (11.84%) than provided support (8.77%). In total, it could be concluded that participants provided more variety of social support than they received.

The three most frequently coded categories were similar for received support and provided support. For received support, it is interesting to note that *promoting social ties through positive interactions* and *reciprocal support* were both coded around 43% of the time, which suggests the importance of maintaining one’s social networks during the time of the COVID-19 pandemic. In contrast, *interpersonal responses to distress* were only observed 19% of the time. Participants made fair use of social media such as zoom and email, noted by *media communication* (17.54%), and were instrumental in *helping others to cope* (11.40%). All the other categories were coded for less than 10% of the qualitative data respondents.

In contrast, the respondents did a large amount of providing emotional support to others *in distress* (50.44%). However, they also *promoted social ties through positive interactions* (39.04%). Again, even though they were providing support, it was often *reciprocal support* (30.70%). *Helping to cope* (16.23%) and *media communication* (13.60%) came in fourth and fifth, indicating the similarities with received support. In other words, they were helping people to cope and using social media to help people as much as they received help with their coping and through social media. Again, the other categories were coded for less than 10% of the qualitative data respondents.

**Instrumental Support.** In this section, we will discuss the open and consolidated codes for instrumental support, both received and provided. For *received instrumental support*, a total of 187 (82.02%) individuals provided valid information, and we developed 145 initial open codes working in group coding sessions (see Table B3). Our respondents reported receiving support from a variety of sources, including family, friends, and neighbors, as well as from professional, usually medical. The content of received help ranged from cleaning the cat litter box to helping with legal procedures. Our initial consolidation resulted in 21 codes (see Table B4). As *cooking* was mentioned frequently on its own in the responses, it had its own consolidated code aside from *household chores*. *Medical help* was also a big code that included all medical help (e.g., medical help, COVID test, and physical therapy) received from professionals and nonprofessionals at this time.

For *provided instrumental support*, 166 (72.81%) individuals provided valid information which produced 71 open codes (e.g., laundry, repairs, and driving). For the most part, the types of services and goods provided were similar with the received support with the exception of



childcare and caregiving. The fewer open codes than the received instrumental support may be a function of our coding process – we had done the preliminary consolidation of the RI codes before turning to PI, and these consolidated codes may have influenced our open-ended coding. Our first initial consolidation of PI was 20 codes. Most codes mirrored RI codes, such as *cooking* and *household chores* being separate codes. Naturally, *medical help* was derived from a smaller group of open codes, as participants were on the providing side.

We then developed the final nine, parallel, consolidated codes from both the RI and PI initial consolidated codes. The initial ratings for inter-coder agreement (ICA) analyses were not in the acceptable range. After discussing what resulted in the different understanding of the codes, re-coding was conducted two times for RI and three times for PI support. For example, there was confusion about whether picking up groceries was *domestic tasks* or *gifts*. Ultimately, the distinction between the code *domestic tasks* and the code *gifts* was made based on the common assumption regarding payment for the material. When a participant indicated their received instrumental help was groceries, we assumed that they received help regarding shopping, picking up, and delivering groceries, but they reimbursed the payment for the groceries to the support provider: hence, not a gift.

The final ICA results were .86 for RI support and .78 for PI support. As a tentative conclusion can be made when ICA is equal or greater than 0.667 (Krippendorff, 2019), we decided to proceed to determining the final codes for the data.

***Final Consolidated Codes for Instrumental Support.*** Table 4.14 presents the final consolidated codes for both provided and instrumental support, as well as their frequencies. Any answer for the instrumental support question that included the act of receiving or providing

information or advice was coded as *information and advice*. For example, one man, aged 74, stated “help with getting out church information to other members, with keeping our children and in-laws informed and safe” (ID 568).

The code *domestic tasks* was used for support activities that pertained to everyday domestic tasks, such as running errands, picking up supplies, and cooking. One participant replied for the received *domestic tasks*, “my spouse does what he can to help around the house. (He is, at the moment, somewhat unable to do much because he was scheduled for rotator cuff surgery just prior to the pandemic lock down and at this point we don't know when that will happen)” (ID 74, female, age 70). As such, people were helping each other with daily mundane tasks despite of their own limitations.

The code *gifts* was used for received and provided materials that did not indicate financial transaction, e.g., repayment for services rendered. Many participants answered that they received or provided masks, including a woman responding “a neighbor asked if I wanted a face mask that she was making. It's reusable.” (ID 99, female, age 73).

The code *paid/professional transactions* hold different meanings for received support and provided support. For received support, this code was used when the participant received formal support, that is, practical help from paid help or professionals. For example, “physician’s assistant reviewed my exam results and made changes to my CPAP device settings” (ID 1331, male, age 80). For provided support, this code was used to indicate when the participant perceived their making payment to the recipient as social support. For example, we used this code if the participant paid a housekeeper for their service and indicated that as social support: “keeping my housekeepers employed” (ID 181, female, age 61).

The code *work/volunteer* was used when the participant received or provided help at the work/volunteer place as a worker/volunteer, mostly from or to colleagues. This code differs from *paid/professional transactions* in that (1) the participant is not making payment to the recipient for both received and provided support, and that (2) the help the participant received or provided is as a worker/volunteer, a role that provides service to clients. For example, a participant responded that that she received “advice about work issues” (ID 513, female, age 68). Another interesting example was a 73-year-old woman who responded “my husband has been in charge of our church grounds and building for the past 5 years. For the first time ever, I went with him to do yard work since the place is vacant and damage could occur if it looks empty and a mess. This volunteering was a huge job” (ID 53). This response indicates that this older woman went out to volunteer precisely because of the COVID-19 situation; otherwise, the church would not look empty and a mess.

The code *opportunities for diversion* was used for receiving or providing opportunities for entertainment, including exercise. A participant responded that “the only help I provide is to forward fun emails to my contacts. It is nice when they acknowledge that they enjoyed them” (ID 32, female, age 80). There were couple of similar responses including “I sent a YouTube video that was funny (they said so)” (ID 151, female, age 68).

When participants offered to help, or were offered help, *offers of support* was used, excluding the instances when the offer was fully realized. This was to avoid double-coding with the content of the offer. Thus, this code was used when the offer was fully or partially declined or when it was not clear the offer was realized to indicate the perceived availability of support by the recipient. One example would be a participant responding “several neighbors have offered to

shop for groceries. We took one person up on the offer, but mostly rely on Instacart grocery delivery” (ID 154, female, age 74). While this participant accepted one person’s offer, other neighbors’ offers still stand and are available.

The code *caregiving* was chosen when the provided social support activity entailed caring for children or other individuals with limitations. An example for the former would be “I take care of my twin granddaughters while my daughter takes online nursing classes at this time” (ID 76, female, age 58); an example for the latter would be “we have been caretaker to our dev[lopmentally] disabled nephew a few times” (ID 119, female, age 69).

*Unspecified support* was used in instances when the provided information was not sufficient to warrant categorization. For instance, the response “supported my daughter at home” (ID 200, female, age 55) did indicate some sort of support, but did not provide enough information on what kind of support she meant.

Again, responses that indicated no support was received or provided were categorized as *none/not-valid*. These responses were not included in the qualitative/mixed-method analyses.

***Frequency for Instrumental Support Codes.*** The number of any coded support was 257 (112.72%) for received support, comparable to the number for provided support, 252 (110.53%). The number of none/not-valid cases were greater for provided support (27.19%) than received support (17.98%), indicating that participants received more instrumental support than they provided.

*Domestic tasks* were reported the most, 56% for received and 42% for provided. The second most received instrumental support was paid/professional transactions (20.18%), which would be due to medical help participants received from professional personnel. This was

followed by *information and advice* (10.53%) and *gifts* (10.09%), dropped half in percentages. All the other categories were coded for less than 10% of the qualitative data respondents.

For provided instrumental support, participants gave other people *gifts* (22.37%), provided *information and advice* (14.47%) and helped *work/volunteer colleagues* (11.40%). Again, the other categories were coded for less than 10% of the qualitative data respondents.

### ***Research Question #3: Specific Social Support Activities by Age and Gender***

In this section, we will examine what specific social support activities older adults received and provided by age group (middle-aged, young-old, and old-old) and gender (male and female). Please note that, for some codes, there were less than 5 responses per cell, which invalidated the use of  $X^2$  analyses. Those analyses will not be discussed.

**Social Support Activities by Age Groups.** As three age groups differ in size (middle-aged,  $n = 33$ , young-old,  $n = 132$ , and old-old,  $n = 61$ ), we will present percentages rather than absolute cell numbers.

***Received Emotional Support.*** The middle-aged group received significantly more support regarding *interpersonal responses to distress* (33%), followed by the young-old (20%) and then the old-old (8%) (see Table 4.15). All age groups used *social media, promoted social ties*, and engaged in *reciprocal support* at comparable levels.

We summed the responses across codes to ascertain the total number of social support responses. Note that the numbers can exceed 100% because many respondents mentioned multiple types of support in their answers. Interestingly, the old-old group reported the least amount/variety of support (146%), while the middle-aged and the young-old groups were comparable (161%).

***Provided Emotional Support.*** The middle-aged group were significantly most likely to *promote social ties through positive interactions* (55%), followed by the old-old (48%) and the young-old (32%) (see Table 4.16). However, the three groups were equally as likely to report *interpersonal responses to distress, reciprocal support, and helping to cope*.

The total responses coded for any support were comparable for the young-old (164%) and the old-old (166%), but the middle-aged group showed slightly higher percentage (173%).

***Summary.*** The middle-aged group was more likely to receive support in distressed situations than the older groups, but was also more likely to engage in building and maintaining social networks. Interestingly, the groups were quite similar in many of the support activities utilized, including social networks. However, the old-old group seemed least likely to receive emotional support, while the middle-aged group was more likely to provide support.

***Received Instrumental Support.*** Help with *domestic tasks* was seen as received instrumental support by more than 50% of responses for all three age groups, but there were non-significant differences between the age groups (see Table 4.17). In total, the old-old group was most likely to report receiving instrumental support (126%), while the percentages were comparable for the middle-aged (106%) and the young-old (109%).

***Provided Instrumental Support.*** Again, providing help with *domestic tasks* was most reported for all three age groups with non-significant age differences, but the percentages were lower than in the received support (see Table 4.18). All three age groups provided comparable rates of *information and advice* and *gifts*. This time, the middle-aged group were most likely to report providing instrumental support (121%), while the young-old (110%) and the old-old (110%) were comparable.

**Summary.** Perhaps the most interesting finding was that doing domestic chores – cooking, cleaning, and yardwork – was seen by these older adults as significant sources of both received and provided social support. As is to be expected, the old-old adults were most likely to report receiving instrumental support, while the middle-aged group was most likely to provide it.

**Social Support Activities by Gender.** As the two groups, males and females, differ in size (58 and 170 respectively), percentages rather than cell counts will be reported. Again, codes with cells with <5 could not be tested and will not be discussed.

**Received Emotional Support.** Male and female participants received social support at comparable levels that *promoted social ties through positive interactions*, were *reciprocal* in nature, and that were tailored to address their *distress* (see Table 4.19). However, females reported higher percentage of total codes than males.

**Provided Emotional Support.** Male and female participants were equally likely to *promote social ties through positive interactions* and engage in *reciprocal support*, but females provided marginally more *interpersonal responses to distress* than males (see Table 4.20). Two groups were equally as likely to *help others to cope* to provide *information/advice*. Again, females had higher percentage of total codes than males.

**Summary.** Thus, female participants reported higher levels of both receiving and providing social support than men did. However, in key areas, like engaging in social network maintenance and reciprocal support, there were no gender differences.

**Received Instrumental Support.** The two most frequent codes for received instrumental were the same for males and females, *domestic tasks*, and *paid/professional transactions* (see Table 4.21). For males, this was followed by *information and advice*, while females had next

highest responses for *gifts*. There were no gender differences for these four activities, and the total percentage of responses were comparable for males and females.

***Provided Instrumental Support.*** Surprisingly, male participants were slightly more likely to provide *domestic tasks support* (see Table 4.22). However, women were significantly more likely than men to provide *gifts*. Further, the total percentage of responses was higher for females.

***Summary.*** There were no gender differences in the amount/variety of instrumental support received. However, male participants were slightly more likely to help out with domestic tasks as a means of providing support, while women were more likely to provide gifts, and were more likely to provide overall instrumental support.

#### ***Research Question #4: Receiving and Providing Social Support Activities and Positive Outcomes***

We conducted a hierarchical regression analysis to examine the associations between the variety of received and provided social support and the ability to find positive outcomes under a stressful situation. Here, the variety of social support indicates the number of social support activities coded for each participant. Positive outcomes also indicated the variety of positive outcomes, meaning, the number of positive outcomes coded for each participant. For control variables, gender, education, and marital status were used. Age was included to explore the associations with positive outcomes and number of chronic illnesses was used as a proxy for current limitations of aging individuals, parallel to the quantitative analyses. We also entered quantitative social support variables, the variety of social support network we used in the



quantitative section of this study, to see which facets of social support were significantly associated with positive outcomes.

First, we will describe the zero-order relationships between the variables used. Then, we will proceed to the results of the hierarchical regression analysis.

***Relationships Between Quantitative Social Support and Qualitative Social Support.*** As there were 92 correlation analyses in total, we adjusted for the effect of multi-testing using Bonferroni-Holm method (see Table 4.23). It should be noted that receiving emotional support (quantitative) and providing emotional support (quantitative) were correlated at .76, indicating a possible multicollinearity problem. Thus, we examined variance inflation factor [VIF] in the regression analysis.

In general, demographic variables were uncorrelated with the social support variables, with the exception that having a partner was positively correlated with receiving and providing instrumental support, and marginally correlated with providing emotional support. Further, most of the social support variables were intercorrelated, indicating that participants who received support also provided more support. Among the quantitative variables, only providing emotional support significantly correlated with positive outcomes, but both receiving and providing emotional support qualitative codes were significantly and positively correlated with positive outcomes. One exception was the qualitative received instrumental support which did not show significant association with positive outcomes.

***A Hierarchical Regression Analysis for Positive Outcomes.*** In the first model, all control variables were entered, accounting for 5% of the variance (see Table 4.24). Being female and being more highly educated were associated with more positive outcomes, with the latter

being marginal in significance. The quantitative social support variables were entered in the second step. None of these variables showed any significant relations with positive outcomes, and the two demographic variables which were significant in the first step were now only marginally significant. The final model consists of all variables including the qualitative social support variables and accounted for 13% of the variance,  $F(13, 215) = 3.52, p < .001$ . Only received emotional support,  $b = .15, t(13) = 1.82, p < .10$ , and provided instrumental support,  $b = .26, t(13) = 2.74, p < .01$ , had significant and positive associations with the number of positive outcomes. All VIF values were less than 3, indicating there was no multicollinearity problem involved.

**Table 4.1**

*Contrasting Emotional and Instrumental Support by Received/Provided Support, Nested within Family and Friends (n=236)*

	Family		Paired <i>t</i> -test	Friends		Paired <i>t</i> -test
	Received	Provided		Received	Provided	
Emotional	1.59 (1.23)	1.87 (1.24)	-5.46***	0.80 (0.79)	0.87 (0.79)	-1.60
Instrumental	1.06 (0.90)	1.07 (0.97)	-0.31	0.33 (0.60)	0.36 (0.64)	-0.72
<i>t</i> -test	7.56***	11.80***		8.18***	9.19***	

† $p < .10$ ; \* $p < .05$ ; \*\* $p < .01$ ; \*\*\* $p < .001$ .

**Table 4.2**

*Comparing Family and Friends on Emotional and Instrument Supported, Nested Within Received and Provided (n=236)*

	Received		Paired <i>t</i> -test	Provided		Paired <i>t</i> -test
	Family	Friends		Family	Friends	
Emotional	1.59 (1.23)	1.59 (1.58)	-0.04	1.87 (1.24)	1.74 (1.57)	1.21
Instrumental	1.06 (0.90)	0.67 (1.20)	4.15***	1.07 (0.97)	0.73 (1.28)	3.77***

*Note.* Friend social support scores were converted from 0-2 scale to 0-4 scale for paired *t*-test comparisons.

†*p* < .10; \**p* < .05; \*\**p* < .01; \*\*\**p* < .001.

**Table 4.3***Comparing Satisfaction for Received/Provided Emotional/Instrumental Support*

	Received support	Provided support	Paired <i>t</i> -test
Emotional support	4.67 (0.58)	4.39 (0.74)	5.55***
Instrumental support	4.82 (0.47)	4.45 (0.84)	6.37***
Paired <i>t</i> -test	-3.85***	-0.68	

*Note.* The sample size varies for satisfaction with support: received emotional support ( $n=220$ ), received instrumental support ( $n=208$ ), provided emotional support ( $n=231$ ), and provided instrumental support ( $n=196$ ).

† $p < .10$ ; \* $p < .05$ ; \*\* $p < .01$ ; \*\*\* $p < .001$

**Table 4.4***Correlations among Study Variables*

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	
1. Age	1.00																			
2. Gender	-.21																			
3. Edu	-.02	-.02																		
4. Married	-.15	-.10	-.04																	
5. CI	.11	.01	-.10	-.04																
6. RE_1 <sup>a</sup>	-.00	.03	.00	.31***	-.01															
7. RE_2	-.03	.23*	.06	-.11	.01	.37***														
8. RI_1	.06	-.06	.01	.47***	-.01	.52***	.09													
9. RI_2	.01	-.03	.12	-.16	.06	.09	.24*	.09												
10. PE_1	.01	.08	-.05	.33***	.02	.78***	.33***	.50***	.09											
11. PE_2	-.05	.27**	-.08	-.08	.13	.24*	.61***	.00	.27**	.32***										
12. PI_1	-.14	-.10	-.02	.44***	.03	.50***	.14	.58***	.16	.58***	.18									
13. PI_2	-.10	.02	-.00	.01	-.08	.12	.13	.14	.31***	.14	.32***	.27**								
14. Sat RE	-.01	-.05	-.03	.05	-.09	.01	-.01	.05	.05	-.09	.02	.01	.06							
15. Sat RI	.04	-.08	.01	.18	.00	.02	-.01	-.00	.06	.00	.06	.01	.03	.39***						
16. Sat PE	-.06	.03	.05	.03	-.10	.05	.10	-.04	.06	-.07	.07	-.02	.11	.45***	.23					
17. Sat PI	-.14	-.05	.04	.11	-.10	.09	.09	.01	-.01	.05	.09	.10	.06	.42***	.33***	.58***				
18. Dep	-.01	.13	-.13	-.07	.07	.01	.03	-.04	-.02	-.01	.01	-.09	-.05	-.38***	-.24†	-.34***	-.38***			
19. Cog	-.05	.05	-.04	-.06	.07	-.03	.03	.01	.04	-.01	-.00	-.04	-.01	-.27**	-.27*	-.34***	-.31**	.46***		
20. Phys	-.05	.14	-.10	-.11	.31***	-.01	.15	-.10	.05	.01	.18	-.03	.05	-.28**	-.18	-.19	-.16	.39***	.37***	

*Note.* *P*-values were corrected by Bonferroni-Holm method to adjust for multiple testing. Edu = education; CI = chronic illnesses; RE = received emotional, RI = received instrumental, PE = provided emotional, and PI = provided instrumental support; sat RE = satisfaction with received emotional support, sat RI = satisfaction with received instrumental support, sat PE = satisfaction with provided emotional support, and sat PI = satisfaction with provided instrumental support; dep = depressive symptoms, cog = cognitive lapses, and phys = physical symptoms.

<sup>a</sup>The number 1 refers to family support and 2 refers to friend support.

†*p* < .10; \**p* < .05; \*\**p* < .01; \*\*\**p* < .001.

**Table 4.5***Complete Paths from Base Model I: Emotional Support and Health Outcomes (N=238)<sup>a</sup>*

Variable relations	Effects <sup>b</sup>		
	Direct	Indirect	Total
Age → chronic illnesses	0.01		0.01
Age → RE from family	0.01	0.00	0.01
Age → RE from friends	0.00	0.00	0.00
Age → PE to family	0.02	0.00	0.02
Age → PE to friends	-0.00	0.00	-0.00
Age → health outcomes	-0.02	0.01	-0.01
Chronic illnesses → RE from family	0.00		0.00
Chronic illnesses → RE from friends	0.01		0.01
Chronic illnesses → PE to family	0.05		0.05
Chronic illnesses → PE to friends	0.13*		0.13*
Chronic illnesses → health outcomes	0.55**	-0.01	0.54**
RE from family → health outcomes	-0.01		-0.01
RE from friends → health outcomes	0.19		0.19
PE to family → health outcomes	0.02		0.02
PE to friends → health outcomes	-0.09		-0.09

*Note.* RE = received emotional, PE = provided emotional support. Model fit:  $\chi^2(16, n=238) = 29.60, p < .05$ ; CFI = .98; RMSEA = .06; SRMR = .04; AIC = 8184.54; BIC = 8358.15.

<sup>a</sup>Complete records are 222; incomplete records are 16.

<sup>b</sup>Path coefficients are unstandardized.

† $p < .10$ ; \* $p < .05$ ; \*\* $p < .01$ ; \*\*\* $p < .001$ .

**Table 4.6***Modified Model I: Emotional Support and Health Outcomes (N=238)<sup>a</sup>*

Variable relations	Effects <sup>b</sup>		
	Direct	Indirect	Total
Chronic illnesses → PE to friends	0.11*		0.11*
Chronic illnesses → health outcomes	0.53**		0.53**

*Note.* Model fit:  $\chi^2(25, n=238) = 9.23, p > .05$ ; CFI = .98; RMSEA = .04; SRMR = .05; AIC = 6565.75; BIC = 6669.92.

<sup>a</sup>Complete records are 222; incomplete records are 16.

<sup>b</sup>Path coefficients are unstandardized.

† $p < .10$ ; \* $p < .05$ ; \*\* $p < .01$ ; \*\*\* $p < .001$ .



**Table 4.7***All Paths from Base Model II: Instrumental Support and Health Outcomes (N=238)<sup>a</sup>*

Variable relations	Effects <sup>b</sup>		
	Direct	Indirect	Total
Age → chronic illnesses	0.01		0.01
Age → RI from family	0.02*	0.00	0.02*
Age → RI from friends	-0.00	0.00	-0.00
Age → PI to family	-0.01	0.00	-0.01
Age → PI to friends	-0.01	-0.00	-0.01
Age → health outcomes	-0.02	0.01	-0.01
Chronic illnesses → RI from family	0.00		0.00
Chronic illnesses → RI from friends	0.04		0.04
Chronic illnesses → PI to family	0.08		0.08
Chronic illnesses → PI to friends	-0.06		-0.06
Chronic illnesses → health outcomes	0.54**	-0.01	0.53**
RI from family → health outcomes	0.09		0.09
RI from friends → health outcomes	0.03		0.03
PI to family → health outcomes	-0.12		-0.12
PI to friends → health outcomes	0.04		0.04

*Note.* RI = received instrumental, PI = provided instrumental support. Model fit:  $\chi^2(19, n=238) = 50.10, p < .001$ ; CFI = .92; RMSEA = .08; SRMR = .05; AIC = 7908.12; BIC = 8071.31.

<sup>a</sup>Complete records are 222; incomplete records are 16.

<sup>b</sup>Path coefficients are unstandardized.

† $p < .10$ ; \* $p < .05$ ; \*\* $p < .01$ ; \*\*\* $p < .001$ .

**Table 4.8***Modified Model II: Instrumental Support and Health Outcomes (N=238)<sup>a</sup>*

Variable relations	Effects <sup>b</sup>		
	Direct	Indirect	Total
Age → RI from family	0.02***		0.02***
Chronic illnesses → health outcomes	0.52**		0.52**

*Note.* RI = received instrumental, PI = provided instrumental support. Model fit:  $\chi^2(30, n=238) = 55.72, p < .01$ ; CFI = .92; RMSEA = .06; SRMR = .06; AIC = 7455.42; BIC = 7542.23.

<sup>a</sup>Complete records are 222; incomplete records are 16.

<sup>b</sup>Path coefficients are unstandardized.

† $p < .10$ ; \* $p < .05$ ; \*\* $p < .01$ ; \*\*\* $p < .001$ .

**Table 4.9**

*Complete paths from base model III: Received support, satisfaction with received support, and health outcomes (N=238)<sup>a</sup>*

Variable relations	Effects <sup>b</sup>		
	Direct	Indirect	Total
Age → chronic illnesses	0.01		0.01
Age → RE	0.01	0.00	0.01
Age → RI	0.01	0.00	0.01
Age → satisfaction with RE	-0.00	-0.00	-0.00
Age → satisfaction with RI	0.00	-0.00	0.00
Age → health outcomes	-0.02	0.00	-0.01
Chronic illnesses → RE	0.00		0.00
Chronic illnesses → RI	0.04		0.04
Chronic illnesses → satisfaction with RE	-0.06		-0.06
Chronic illnesses → satisfaction with RI	-0.00		-0.00
Chronic illnesses → health outcomes	0.45*	0.09	0.53**
RE → health outcomes	0.04		0.04
RI → health outcomes	0.00		0.00
Satisfaction with RE → health outcomes	-1.45***		-1.45***
Satisfaction with RI → health outcomes	-0.67†		-0.67†

*Note.* RE = received emotional, RI = received instrumental support. Model fit:  $\chi^2(20, n=238) = 32.73, p < .05$ ; CFI = .96; RMSEA = .05; SRMR = .03; AIC = 8114.56; BIC = 8274.28.

<sup>a</sup>Complete records are 188; incomplete records are 50.

<sup>b</sup>Path coefficients are unstandardized.

† $p < .10$ ; \* $p < .05$ ; \*\* $p < .01$ ; \*\*\* $p < .001$ .

**Table 4.10***Modified Model III: Received Support, Satisfaction with Received support, and Health Outcomes**(N=238)<sup>a</sup>*

Variable relations	Effects <sup>b</sup>		
	Direct	Indirect	Total
Chronic illnesses → health outcomes	0.44*		0.44*
Satisfaction with RE → health outcomes	-1.46***		-1.46***
Satisfaction with RI → health outcomes	-0.76*		-0.76*

*Note.* RE stands for “received emotional”, RI for “received instrumental”. Model fit:  $\chi^2(26, n=238) = 33.20, p > .10$ ; CFI = .97; RMSEA = .03; SRMR = .04; AIC = 6497.83; BIC = 6598.53.

<sup>a</sup>Complete records are 188; incomplete records are 50.

<sup>b</sup>Path coefficients are unstandardized.

† $p < .10$ ; \* $p < .05$ ; \*\* $p < .01$ ; \*\*\* $p < .001$ .

**Table 4.11**

*Complete Paths from Base Model IV: Provided Support, Satisfaction with Provided Support, and Health Outcomes (N=238)<sup>a</sup>*

Variable relations	Effects <sup>b</sup>		
	Direct	Indirect	Total
Age → chronic illnesses	0.01		0.01
Age → PE	0.02	0.00	0.02
Age → PI	-0.02†	0.00	-0.02†
Age → satisfaction with PE	-0.01	-0.00	-0.01
Age → satisfaction with PI	-0.02*	-0.00	-0.02*
Age → health outcomes	-0.04†	0.03*	-0.01
Chronic illnesses → PE	0.17		0.17
Chronic illnesses → PI	0.02		0.02
Chronic illnesses → satisfaction with PE	-0.09		-0.09
Chronic illnesses → satisfaction with PI	-0.05		-0.05
Chronic illnesses → health outcomes	0.39*	0.11	0.50*
PE → health outcomes	0.06		0.06
PI → health outcomes	-0.07		-0.07
Satisfaction with PE → health outcomes	-0.78**		-0.78**
Satisfaction with PI → health outcomes	-0.74**		-0.74**

*Note.* PE = provided emotional support, PI = provided instrumental support. Model fit:  $\chi^2(20, n=238) = 36.66, p < .05$ ; CFI = .96; RMSEA = .06; SRMR = .04; AIC = 8423.06; BIC = 8582.78.

<sup>a</sup>Complete records are 185; incomplete records are 53.

<sup>b</sup>Path coefficients are unstandardized.

† $p < .10$ ; \* $p < .05$ ; \*\* $p < .01$ ; \*\*\* $p < .001$ .

**Table 4.12***Modified Model IV: Provided Support, Satisfaction with Provided Support, and Health Outcomes**(N=238)<sup>a</sup>*

Variable relations	Effects <sup>b</sup>		
	Direct	Indirect	Total
Age → PI	-0.03**		-0.03**
Age → satisfaction with PI	-0.02*		-0.02*
Age → health outcomes	-0.03	0.01†	-0.02
Chronic illnesses → health outcomes	0.41*		0.41*
Satisfaction with PE → health outcomes	-0.77**		-0.77**
Satisfaction with PI → health outcomes	-0.77**		-0.77**

*Note.* PI = provided instrumental support. Model fit:  $\chi^2(30, n=238) = 46.86, p < .05$ ; CFI = .96; RMSEA = .05; SRMR = .05; AIC = 8413.26; BIC = 8538.26.

<sup>a</sup>Complete records are 185; incomplete records are 53.

<sup>b</sup>Path coefficients are unstandardized.

† $p < .10$ ; \* $p < .05$ ; \*\* $p < .01$ ; \*\*\* $p < .001$ .

**Table 4.13***Frequencies of Emotional Support Activities (N=228)*

	Received (%)	Provided (%)
Interpersonal responses to distress	44 (19.30)	116 (50.88)
Promoting social ties through positive interactions	99 (43.42)	89 (39.04)
Reciprocal support	99 (43.42)	70 (30.70)
Helping to cope	26 (11.40)	37 (16.23)
Information and advice	8 (3.51)	16 (7.02)
Perceived availability of/to support	6 (2.63)	13 (5.70)
Media communication	40 (17.54)	31 (13.60)
Religious/spiritual support	6 (2.63)	3 (1.32)
Pets	22 (9.65)	NA
Professional help	7 (3.07)	NA
Total (any support)	357 (156.58)	375 (164.47)
None/not valid cases	27 (11.84)	20 (8.77)

*Note.* The number of codes exceeds the number of participants (228) because their quotations were often coded with multiple codes. None/not valid cases indicate the number of participants, not number of codes used, who provided corresponding responses.

**Table 4.14***Frequencies of Instrumental Support Activities (N=228)*

	Received (%)	Provided (%)
Information and advice	24 (10.53)	33 (14.47)
Domestic tasks	128 (56.14)	95 (41.67)
Gifts	23 (10.09)	51 (22.37)
Paid/professional transactions	46 (20.18)	4 (1.75)
Work/volunteer colleagues	12 (5.26)	26 (11.40)
Opportunities for diversion	5 (2.19)	5 (2.19)
Offers of support	7 (3.07)	7 (3.07)
Caregiving	6 (2.63)	19 (8.33)
Unspecified support	6 (2.63)	12 (5.26)
Total (any support)	257 (112.72)	252 (110.53)
None/not valid cases	41 (17.98)	62 (27.19)

*Note.* The number of codes exceeds the number of participants (228) because their quotations were often coded with multiple codes. None/not valid cases indicate the number of participants, not number of codes used, who provided corresponding responses.



**Table 4.15***Frequencies of Received Emotional Support Activities by Age Groups (n=226)*

	Middle-aged (%) (n=33)	Young-old (%) (n=132)	Old-old (%) (n=61)	Total (%) (n=226)	$\chi^2$
Interpersonal responses to distress	11 (33.33)	26 (19.70)	5 (8.20)	42 (18.42)	9.20*
Promoting social ties through positive interactions	12 (36.36)	57 (43.18)	30 (49.18)	99 (43.42)	1.48
Reciprocal support	13 (39.39)	58 (43.94)	28 (45.90)	99 (43.42)	0.37
Helping to cope	5 (15.15)	17 (12.88)	4 (6.56)	26 (11.40)	NA
Information/advice	1 (3.03)	4 (3.03)	3 (4.92)	8 (3.51)	NA
Perceived availability of support	0 (0)	4 (3.03)	2 (3.28)	6 (2.63)	NA
Media communication	5 (15.15)	25 (18.94)	10 (16.39)	40 (17.54)	0.36
Religious/spiritual support	3 (9.09)	3 (2.27)	0 (0)	6 (2.63)	NA
Pets	2 (6.06)	14 (10.61)	6 (9.84)	22 (9.65)	NA
Professional help	1 (3.03)	5 (3.79)	1 (1.64)	7 (3.07)	NA
Total (any support)	53 (160.61)	213 (161.36)	89 (145.90)	355 (155.70)	NA
None/not valid cases	3 (9.09)	18 (13.64)	6 (9.84)	27 (11.84)	NA

*Note.* The number of codes exceeds the number of participants (226) because their quotations were often coded with multiple codes. Two participants did not have information on age and were excluded from this table. Middle-aged group consists of participants aged less than 65, the young-old consists of participants of age range 65 to 74, and the old-old, who are older than 74.

**Table 4.16***Frequencies of Provided Emotional Support Activities by Age Groups (n=226)*

	Middle-aged (%) (n=33)	Young-old (%) (n=132)	Old-old (%) (n=61)	Total (%) (n=226)	$\chi^2$
Interpersonal responses to distress	15 (45.45)	67 (50.76)	33 (54.10)	115 (50.44)	0.64
Promoting social ties through positive interactions	18 (54.55)	42 (31.82)	29 (47.54)	89 (39.04)	8.04*
Reciprocal support	10 (30.30)	42 (31.82)	18 (29.51)	70 (30.70)	0.01
Helping to cope	7 (21.21)	25 (18.94)	5 (8.20)	37 (16.23)	2.78
Information/advice	0 (0)	11 (8.33)	5 (8.20)	16 (7.02)	NA
Perceived availability of support	3 (9.09)	7 (5.30)	3 (4.92)	13 (5.70)	NA
Media communication	3 (9.09)	20 (17.42)	8 (13.11)	31 (13.60)	NA
Religious/spiritual support	1 (3.03)	2 (1.52)	0 (0)	3 (1.32)	NA
Total (any support)	57 (172.73)	216 (163.64)	101 (165.57)	374 (164.04)	NA
None/not valid cases	3 (9.09)	11 (8.33)	5 (8.20)	20 (8.77)	NA

*Note.* The number of codes exceeds the number of participants (226) because their quotations were often coded with multiple codes. Two participants did not have information on age and were excluded from this table. Middle-aged group consists of participants aged less than 65, the young-old consists of participants of age range 65 to 74, and the old-old, who are older than 74.

**Table 4.17***Frequencies of Received Instrumental Support Activities by Age Groups (n=227)*

	Middle-aged (%) (n=33)	Young-old (%) (n=132)	Old-old (%) (n=61)	Total (%) (n=226)	$\chi^2$
Information and advice	3 (9.09)	12 (9.09)	9 (14.75)	24 (10.53)	NA
Domestic tasks	17 (51.52)	74 (56.06)	36 (59.02)	127 (55.70)	0.49
Gifts	2 (6.06)	10 (7.58)	11 (18.03)	23 (10.09)	NA
Paid/professional transactions	4 (12.12)	26 (19.70)	16 (26.23)	46 (20.18)	NA
Work/volunteer colleagues	4 (12.12)	7 (5.30)	1 (1.64)	12 (5.26)	NA
Opportunities for diversion	1 (3.03)	3 (2.27)	1 (1.64)	5 (2.19)	NA
Offers of support	2 (6.06)	3 (2.27)	2 (3.28)	7 (3.07)	NA
Caregiving	1 (3.03)	5 (3.79)	0 (0)	6 (2.63)	NA
Unspecified support	1 (3.03)	4 (3.03)	1 (1.64)	6 (2.63)	NA
Total (any support)	35 (106.06)	144 (109.09)	77 (126.23)	256 (112.28)	NA
None/not valid cases	8 (24.24)	24 (18.18)	8 (13.11)	41 (17.98)	NA

*Note.* The number of codes exceeds the number of participants (227) because their quotations were often coded with multiple codes. One participant who did not provide a valid answer lacked information on age and was excluded from this table. Middle-aged group consists of participants aged less than 65, the young-old consists of participants of age range 65 to 74, and the old-old, who are older than 74.

**Table 4.18***Frequencies of Provided Instrumental Support Activities by Age Groups (n=226)*

	Middle-aged (%) (n=33)	Young-old (%) (n=132)	Old-old (%) (n=61)	Total (%) (n=226)	$\chi^2$
Information and advice	6 (18.18)	17 (12.88)	10 (16.39)	33 (14.47)	0.81
Domestic tasks	10 (30.30)	56 (42.42)	29 (47.54)	95 (41.67)	2.63
Gifts	7 (21.21)	30 (23.48)	14 (22.95)	51 (22.37)	0.04
Paid/professional transactions	1 (3.03)	3 (2.27)	0 (0.00)	4 (1.75)	NA
Work/volunteer colleagues	6 (18.18)	16 (12.12)	4 (6.56)	26 (11.40)	NA
Opportunities for diversion	0 (0.00)	3 (2.27)	2 (3.28)	5 (2.19)	NA
Offers of support	3 (9.09)	4 (3.03)	0 (0.00)	7 (3.07)	NA
Caregiving	3 (9.09)	10 (7.58)	6 (9.84)	19 (8.33)	NA
Unspecified support	4 (12.12)	6 (4.55)	2 (3.28)	12 (5.26)	NA
Total (any support)	40 (121.21)	145 (109.85)	67 (109.84)	252 (110.53)	NA
None/not valid cases	7 (21.21)	38 (28.79)	15 (24.59)	62 (27.19)	NA

*Note.* The number of codes exceeds the number of participants (228) because their quotations were often coded with multiple codes. Two participants who did not provide a valid answer lacked information on age and were excluded from this table. Middle-aged group consists of participants aged less than 65, the young-old consists of participants of age range 65 to 74, and the old-old, who are older than 74.

**Table 4.19***Frequencies of Received Emotional Support Activities by Gender (N=228)*

	Male (%) (n=58)	Female (%) (n=170)	Total (%) (N=228)	$\chi^2$
Interpersonal responses to distress	10 (17.24)	34 (20.00)	44 (19.30)	0.21
Promoting social ties through positive interactions	23 (39.66)	76 (44.71)	99 (43.42)	0.45
Reciprocal support	21 (36.21)	78 (45.88)	99 (43.42)	1.65
Helping to cope	3 (5.17)	23 (13.53)	26 (11.40)	NA
Information/advice	3 (5.17)	5 (2.94)	8 (3.51)	NA
Perceived availability of support	2 (3.45)	4 (2.35)	6 (2.63)	NA
Media communication	4 (6.90)	36 (21.18)	40 (17.54)	NA
Religious/spiritual support	0 (0)	6 (3.53)	6 (2.63)	NA
Pets	2 (3.45)	20 (11.76)	22 (9.65)	NA
Professional help	2 (3.45)	5 (2.94)	7 (3.07)	NA
Total (any support)	70 (120.69)	287 (168.82)	357 (156.58)	NA
None/not valid cases	10 (17.24)	17 (10.00)	27 (11.84)	NA

*Note.* The number of codes exceeds the number of participants (228) because their quotations were often coded with multiple codes.

**Table 4.20***Frequencies of Provided Emotional Support Activities by Gender (N=228)*

	Male (%) (n=58)	Female (%) (n=170)	Total (%) (N=228)	$\chi^2$
Interpersonal responses to distress	24 (41.38)	92 (54.12)	116 (50.88)	2.81†
Promoting social ties through positive interactions	21 (36.21)	68 (40.00)	89 (39.04)	0.26
Reciprocal support	15 (25.86)	55 (32.35)	70 (30.70)	0.86
Helping to cope	12 (20.69)	25 (14.71)	37 (16.23)	1.14
Information/advice	5 (8.62)	11 (6.47)	16 (7.02)	0.31
Perceived availability of support	3 (5.17)	10 (5.88)	13 (5.70)	NA
Media communication	3 (5.17)	28 (16.47)	31 (13.60)	NA
Religious/spiritual support	0 (0)	3 (1.76)	3 (1.32)	NA
Total (any support)	83 (143.10)	292 (171.76)	375 (164.47)	NA
None/not valid cases	7 (12.07)	13 (7.65)	20 (8.77)	NA

*Note.* The number of codes exceeds the number of participants (228) because their quotations were often coded with multiple codes.

**Table 4.21***Frequencies of Received Instrumental Support Activities by Gender (N=228)*

	Male (%) (n=58)	Female (%) (n=170)	Total (%) (N=228)	$\chi^2$
Information and advice	8 (13.79)	16 (9.41)	24 (10.53)	0.88
Domestic tasks	31 (53.45)	97 (57.06)	128 (56.14)	0.23
Gifts	6 (10.34)	17 (10.00)	23 (10.09)	0.01
Paid/professional transactions	13 (22.41)	33 (19.41)	46 (20.18)	0.24
Work/volunteer colleagues	3 (5.17)	9 (5.29)	12 (5.26)	NA
Opportunities for diversion	1 (1.72)	4 (2.35)	5 (2.19)	NA
Offers of support	0 (0)	7 (4.12)	7 (3.07)	NA
Caregiving	2 (3.45)	4 (2.35)	6 (2.63)	NA
Unspecified support	3 (5.17)	3 (1.76)	6 (2.63)	NA
Total (any support)	67 (115.52)	190 (111.76)	257 (112.72)	NA
None/not valid cases	6 (10.34)	35 (20.59)	41 (17.98)	NA

*Note.* The number of codes exceeds the number of participants (228) because their quotations were often coded with multiple codes.

**Table 4.22***Frequencies of Provided Instrumental Support Activities by Gender (N=228)*

	Male (%) (n=58)	Female (%) (n=170)	Total (%) (N=228)	$\chi^2$
Information and advice	6 (10.34)	27 (15.88)	33 (14.47)	1.07
Domestic tasks	30 (51.72)	65 (38.24)	95 (41.67)	3.24†
Gifts	7 (12.07)	44 (25.88)	51 (22.37)	4.75*
Paid/professional transactions	0 (0)	4 (2.35)	4 (1.75)	NA
Work/volunteer colleagues	8 (13.79)	18 (10.59)	26 (11.40)	0.44
Opportunities for diversion	1 (1.72)	4 (2.35)	5 (2.19)	NA
Offers of support	1 (1.72)	6 (3.53)	7 (3.07)	NA
Caregiving	5 (8.62)	14 (8.24)	19 (8.33)	0.01
Unspecified support	3 (5.17)	9 (5.29)	12 (5.26)	NA
Total (any support)	61 (105.17)	191 (112.35)	252 (110.53)	NA
None/not valid cases	14 (24.14)	48 (28.24)	62 (27.19)	NA

*Note.* The number of codes exceeds the number of participants (228) because their quotations were often coded with multiple codes.



**Table 4.23***Correlations among Qualitative/Mixed-Method Analysis Variables*

	1	2	3	4	5	6	7	8	9	10	11	12	13
1. Age	1.00												
2. Gender	-.21†												
3. Edu	-.02	-.02											
4. Married	-.15	-.10	-.04										
5. CI	.11	.01	-.10	-.04									
6. RE	-.02	.13	.03	.17	-.00								
7. RI	.05	-.06	.07	.28***	.02	.43***							
8. PE	-.02	.19	-.07	.21†	.08	.76***	.41***						
9. PI	-.15	-.06	-.02	.33***	-.02	.40***	.55***	.51***					
10. RE_C <sup>a</sup>	-.11	.20	.05	-.06	.04	.42***	.22†	.36***	.15				
11. RI_C	.04	-.02	.04	.12	.06	.17	.34***	.22†	.25**	.31***			
12. PE_C	-.02	.12	.08	.08	.02	.24*	.20	.42***	.29***	.35***	.25*		
13. PI_C	-.13	.03	.09	.15	-.02	.27**	.28**	.35***	.50***	.23*	.27**	.038***	
14. PO	-.13	.16	.10	-.00	-.05	.21†	.15	.25**	.19	.28**	.19	.028**	.036***

*Note.* *P*-values were corrected by Bonferroni-Holm method to adjust for multiple testing. Edu = education; CI = chronic illnesses; RE = received emotional, RI = received instrumental, PE = provided emotional, PI = provided instrumental support; and PO = positive outcomes.

<sup>a</sup>C refers to quantitative data, indicating that these are coded.

†*p* < .10; \**p* < .05; \*\**p* < .01; \*\*\**p* < .001.

Table 4.24

*Regression Result of Qualitative Social Support Variables and Positive Outcomes (n=227)*

	Model 1			Model 2			Model 3		
	<i>b</i>	SE	$\beta$	<i>b</i>	SE	$\beta$	<i>b</i>	SE	$\beta$
Age	-.01	.01	-.09	-.01	.01	-.09	-.01	.01	-.07
Gender	.39*	.17	.15*	.31†	.18	.12†	.22	.18	.09
Edu	.11†	.07	.11†	.12†	.07	.11†	.08	.07	.08
Married	.01	.17	.01	-.19	.18	-.07	-.12	.18	-.05
CI	-.05	.09	-.03	-.07	.09	-.05	-.07	.09	-.05
RE				.02	.07	.03	-.00	.07	-.00
RI				.01	.09	.01	.01	.09	.01
PE				.08	.07	.12	.02	.08	.02
PI				.11	.08	.13	.02	.08	.03
RE_C							.15†	.08	.14†
RI_C							.06	.10	.04
PE_C							.11	.08	.10
PI_C							.26**	.09	.21**
$R^2$		.05			.10			.19	
$\Delta R^2$					.05			.08	
<i>F</i>		2.42*			2.72**			3.52***	

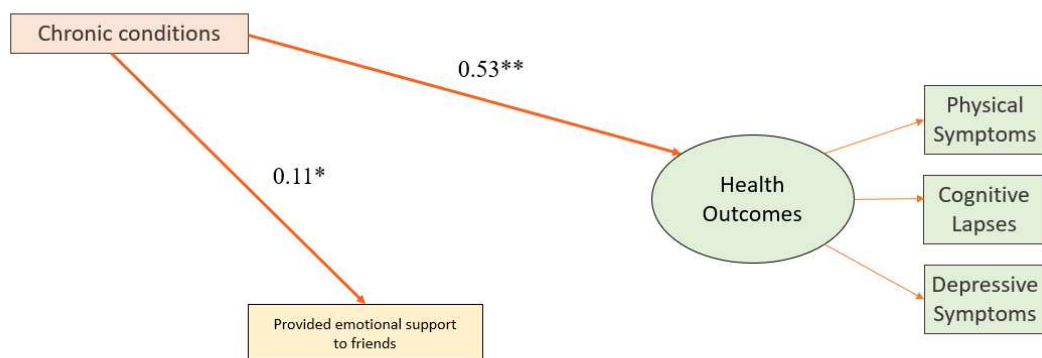
*Note.* The size of sample varies slightly. RE = received emotional, RI = received instrumental,

PE = provided emotional, and PI = provided instrumental support.

† $p < .10$ ; \* $p < .05$ ; \*\* $p < .01$ ; \*\*\* $p < .001$ .

**Figure 4.1**

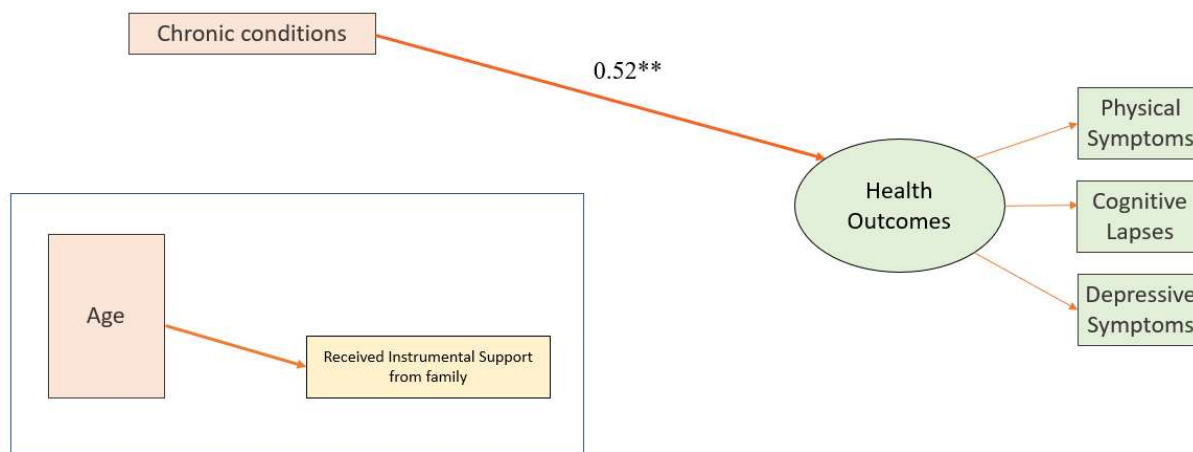
*Modified Model I: Emotional Support and Health Outcomes*



† $p < .10$ ; \* $p < .05$ ; \*\* $p < .01$ ; \*\*\* $p < .001$ .

**Figure 4.2**

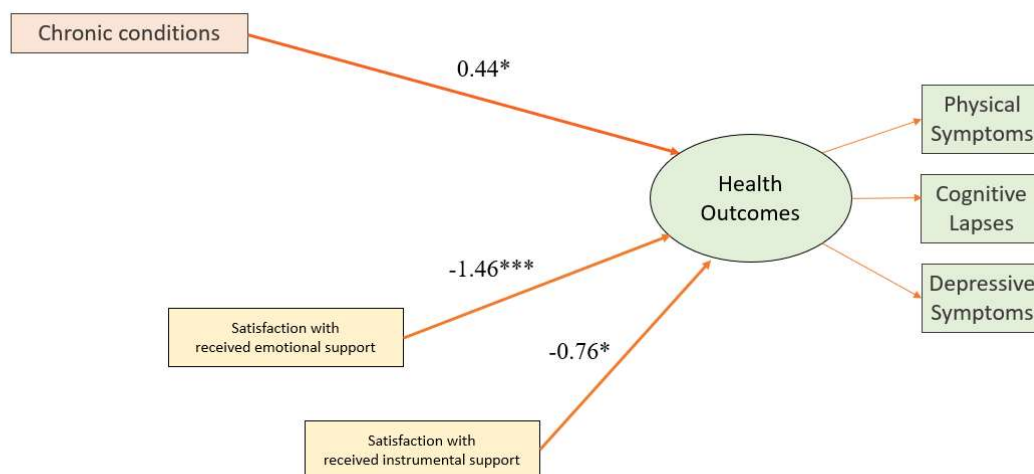
*Modified Model II: Instrumental Support and Health Outcomes*



† $p < .10$ ; \* $p < .05$ ; \*\* $p < .01$ ; \*\*\* $p < .001$ .

**Figure 4.3**

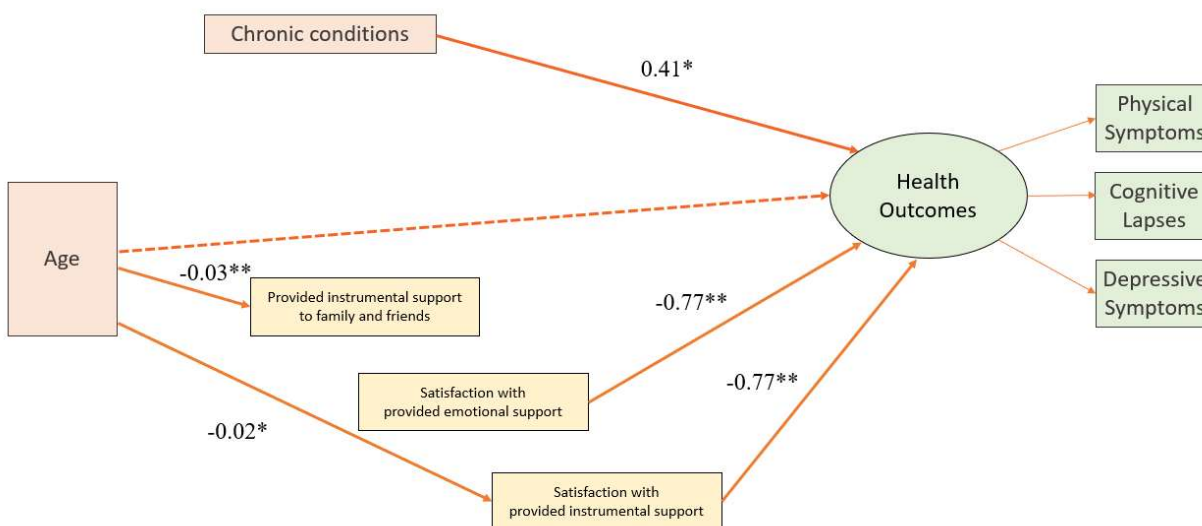
*Modified Model III: Received Support, Satisfaction with Received support, and Health Outcomes*



† $p < .10$ ; \* $p < .05$ ; \*\* $p < .01$ ; \*\*\* $p < .001$ .

Figure 4.4

*Modified Model IV: Provided Support, Satisfaction with Provided Support, and Health Outcomes*



† $p < .10$ ; \* $p < .05$ ; \*\* $p < .01$ ; \*\*\* $p < .001$ .

## DISCUSSION

There were shared concerns among researchers, clinicians, and policy makers that COVID-19 pandemic poses threats to the older population not only in terms of mortality (Sharma, 2021), but also in terms of social isolation (Berg-Weger & Morley, 2020). The focus of this dissertation was how older adults actually fared in the early period of the pandemic, specifically focusing on the extent of social support utilization and provision, and its relationship with optimal aging.

Mixed findings are prevalent in the literature on social support and health outcomes (Gleason & Bornstein, 2020). This is partly due to the fact that social support can be studied in various aspects, such as its sources, directionality, and type of support. At the same time, study participants often are facing different stressors, which may affect the relationship between social support and health outcomes. While COVID-19 pandemic is a tragedy that is costing many lives and resources, it does provide a unique opportunity in that every member of society is facing a shared stressor. Thus, a social support study in this situation may provide a clearer picture of the relationship between different aspects of social support and optimal aging including health outcomes.

We examined different aspects of social support and their association with optimal aging in a well-educated community-residing sample, whose age ranged from 51 to 95. We constructed this study in two parts, one quantitative and one qualitative/mixed-method. The former examines optimal aging in terms of health outcomes using the variety of social support networks and social support satisfaction; the latter, as in positive outcomes participants found in the COVID-19 pandemic situation using the variety of social support activities. We found that these older adults

were well-integrated into their social network, receiving and providing various kinds of support, such as domestic tasks, responses to distress, and positive interactions that promoted social ties.

We drew upon three frameworks for the theoretical background of this dissertation: productive aging, successful aging, and optimal aging. Productive aging (Sherraden et al., 2001) was used for the argument that providing social support, even emotional support, could be considered as a productive activity that benefits both older adults and society. This is in the context where older adults are often perceived and studied as mere recipients of social support, but not sources of social support. However, some researchers have pointed out that older adults provide social support as well (e.g., Boerner & Reinhardt, 2003) and that it may be better for their health outcomes than receiving support (Brown et al., 2003). Additionally, one component of successful aging (Rowe & Kahn, 1997) is engagement in social relations and productive activities, both of which align with the act of providing social support. Thus, we decided to focus on received and provided support in relation to optimal aging.

The successful aging framework also provided us with the operationalization of what is meant by aging well, for which we used depressive symptoms, cognitive lapses, and physical symptoms. The optimal aging framework is distinctive from successful aging framework in that it explicitly recognizes the limitations that accompanies aging individuals (Aldwin & Igarashi, 2016). We translated this property of optimal aging framework into the analytic plan which uses the number of chronic illnesses as long-lasting, current limitations of participants, and then examines the weekly health outcomes as more proximal outcomes of optimal aging. At the same time, we decided that the ability to find positive outcomes under this stressful situation may be an unidentified component of optimal aging. It should be noted that we are not testing the full



model of optimal aging; we are focusing on translating the component regarding optimal functioning given the limitations into an empirical study.

There are four theories regarding social support that we examined in the quantitative part of the study. Equity theory (Adams, 1965) posits both under-benefitting and over-benefitting would be harmful; social exchange theory (Homans, 1958) states that receiving social support is beneficial than providing in the short-term; esteem-enhancement theory (Batson & Powell, 2003) argues that providing is better than receiving. Additionally, Antonucci and colleagues (2014) introduced social convoy theory, that specifies the concentric circles of relationships, indicating proximity to the individual. It also includes the concept of a social support bank, that is, individuals can “build up credits” for social support across time. Both of these concepts suggested that not all social relationships will have same rules for or consequences of regarding receiving and providing social support. For example, individuals may benefit more from receiving than providing from social partners that they are not close to, but they might want to provide more to social partners that they are closer to. Therefore, we chose to base our hypotheses on esteem-enhancement theory that supports previous findings that providing social support is better than receiving for health outcomes, focusing on the inner circle of social partners that includes family and friends.

The qualitative/mixed-method research questions provide illustration of actual social support activities that older adults received and provided, adding to what we understood about the social support network variety from the quantitative research questions. For example, the variety of social support network members participants received and provided emotional support from or to was around two on average. To elaborate, an average participant would have received emotional support from a spouse and friends, as an example of two kinds of social partners.

Exploring specific social support activities with open-ended questions was important as we did not know what kind of social support activities took place in this pandemic situation, given that all of these older adults were theoretically in lockdown due to the COVID pandemic at the time.

### **Social Support Network Variety and Optimal Aging**

The first quantitative research question concerned describing the social support received and provided from family and friends during the COVID pandemic, and the correlations among the variables of interest. First, we found that participants received and provided more emotional support than instrumental support, which makes sense because the older age and social distancing measures may have made receiving and providing instrumental support more difficult. In general, participants mostly received and provided comparable amount of social support within family and within friend relations, respectively, with the exception that they reported that they provided more emotional support to family than they received. Socioemotional selectivity theory (Carstensen et al., 2003) explains that friend relationships are more reciprocal in nature, as there is the sense of obligation for family relationships. As such, participants may have more reciprocal relationships with their friends concerning social support. Comparing across family and friends, participants received and provided more instrumental support from and to family than they did from and to friends. This is consistent with previous findings that individuals rely more on close kins for instrumental support and when in need (Agneessens et al., 2006; Litwak & Szelenyi, 1969).

In terms of social support satisfaction, participants were more satisfied with the support they received than the support they provided, which may imply that they felt that they could or should do more for others. This sentiment is reflected in one participant's response: "if I were younger and were not trying to stay OUT of grocery stores, I like to think I'd be running more

errands for people, maybe offering child care to foster families” (ID 65, female, age 67). This could also be explained by Sin and colleagues’ (2021) discussion that received support in the pandemic situation is likely to be pandemic-specific and thus meet the needs of recipients well. While satisfaction was higher for received instrumental support than for received emotional support, there was non-significant difference between provided emotional support and provided instrumental support. It could be that participants appreciated instrumental support more because they knew it was difficult to provide in the pandemic situation.

Correlations showed that age and education did not have any significant relationships with other variables, which contradicts many findings concerning their associations with health outcomes (Hopman et al., 2009; Zajacova & Lawrence, 2018). This may be due to our sample being healthy and highly educated. Marital status had the expected positive relationships with social support within families, as married participants would have had their partners to exchange social support with. The number of chronic illnesses was only correlated with physical symptoms. Correlations suggested that females were more likely to both receive and provide emotional support with more variety of friends, which makes sense as females usually have a bigger network than males and rely on multiple social partners, including friends, for support (Antonucci & Akiyama, 1987; McLaughlin et al., 2010). This result will be complemented below with qualitative/mixed-method results regarding the variety of social support activities.

It was noteworthy that none of the social support variables indicating social support network variety was significantly correlated with health outcome variables. This was surprising, as we had hypothesized that, in general, more social support would be associated with fewer symptoms based on the literature (e.g., Taylor, 2011).

There were significant inter-correlations among the social support network variety variables, usually with the same source or recipient of support, implying some sort of reciprocity. For example, received emotional support from family was correlated with all other support from or to family. This could be that they are exchanging social support with a particular social partner, or that while social support is flowing in one direction, participants are providing others as they receive from their network. This could also indicate the functioning of established social support networks. If there are social support networks through which participants have been receiving or providing one form of social support (e.g., emotional support), the other form of social support (e.g., instrumental support) is likely to occur as well.

Satisfaction with social support variables were all significantly correlated with each other, perhaps indicating the quality of established social support networks or personality effects. These variables also showed significant negative correlation with depressive symptoms and cognitive lapses, while some relationships were marginal in significance for the latter. It is worth noting that physical symptoms were only significantly correlated with satisfaction with received emotional support.

As described, the health outcome variables, which were our dependent variables for the quantitative part of this study, were not significantly associated with social support network variety. Nonetheless, we included the social support network variety in the final analyses, as controlling for chronic illnesses may allow uncovering effects to emerge.

Structural equation modelling analyses showed that none of the social support network variables were related to optimal aging. However, all social support satisfaction variables were significantly negatively associated with negative health outcomes. Thus, it was not the act of receiving or providing certain types of support from or to more types of social partners, but it

was the satisfaction of support that mattered for health outcomes. This result is consistent with some of the previous findings where satisfaction or quality of social support mattered more than mere size of social network (e.g., McLaughlin et al., 2012; Oddone et al., 2011). Age did not show significant associations with health outcomes for all models. While one model did show a direct association between age and health outcomes, the total effect was cancelled out with the indirect association between the two.

These findings did not support our hypotheses based on the literature concerning social support network variety, but supported the hypotheses concerning social support satisfaction. Additionally, the fact that satisfaction with both received and provided support were significantly associated with health outcomes supports our argument that provided support is at least as important as received support to health outcomes, even in the face of current limitations. Thus, testing if a productive activity can be associated with proximal health outcomes, controlling for chronic conditions, yielded significant findings, validating the analytic model based on the hybrid model of optimal aging/successful aging.

We have based our hypotheses on esteem-enhancement theory (Batson & Powell, 2003). According to esteem-enhancement theory, providing social support leads to a boost in esteem and thus better health outcomes, while receiving social support can lead to feelings of dependence and thus worse health outcomes. Our analyses showed that the act of social support itself, whether receiving or providing, had nonsignificant associations with health outcomes, while satisfaction with social support did. While this could be due to measuring the variety of social support network rather than the amount of social support, we believe our measure would be at least correlated with the amount of social support. Thus, these results do not support esteem-enhancement theory or the other two theories that are concerned only with the act of

receiving or providing social support. Rather, we believe our results have critical implication for these three theories. We have critiqued social exchange theory (Homans, 1958) and equity theory (Adams, 1965) earlier in this dissertation as these theories do not consider the intrinsic reward one may gain from providing social support. Now, we propose to expand this critique to esteem-enhancement theory as well. For example, if one is satisfied with received social support and not satisfied with provided social support, would esteem-enhancement theory still stand, arguing that one would gain from providing social support and lose from receiving social support? Would the inequality or equality symbols between receiving support and providing support stay the same for all three theories? We argue not. Based on our results, we argue that it is not sufficient only to discuss the direction of social support without considering individuals' satisfaction of it.

On the other hand, we call to attention to the fact that the satisfaction with provided support was important for health outcomes, not only the satisfaction with received support. As such, we conclude that there is evidence for older adults needing to be satisfied with social support they provide, emphasizing the importance of provided support, not only received support.

### **Social Support Activity and Optimal Aging**

The quantitative analyses showed that these community-residing older adults were both providing and receiving considerable social support from family and friends, despite being under lockdown. We used the open-ended data in the survey to examine (a) what specific support activities older adults were receiving and providing, both in terms of instrumental and emotional support; and (b) whether being integrated into a social support network, especially in terms of providing support, was related to perceiving positive outcomes during the COVID-19 pandemic. Providing social support has been previously linked to producing meaning and purpose in life

(Ostir et al., 2002), and we felt being able to perceive positives in stressful situations was one function of sense of meaning, which is essential to theories of optimal aging (Aldwin & Igarashi, 2016).

Overall, we found that most of the participants both received and provided various social support activities, actively engaging with their social networks. Various social partners including spouse, friends, neighbors, relatives, children, grandchildren, and paid help frequently appeared in their responses. The extent of help they received and provided varied as well, ranging from picking up items from the store to sending funny emails. One participant even stated that “I enjoy seeing families bicycling by together and seeng[sic] neighbors working in their gardens. A friendly wave is enough to make me smile” (ID 154, female, age 74), indicating that she perceived this brief, friendly interaction, as social support.

Participants in general received and provided more emotional support than instrumental support, which was in accordance with quantitative results. This was not surprising considering the COVID-19 context and the age and life structure of these participants: social distancing and lockdown measures would have made providing instrumental support more difficult than emotional support for this at-risk group. We coded more activities of providing emotional support than receiving emotional support, but the percentages for instrumental support were comparable for received and provided. The latter conformed to the quantitative results, but the former only partially did. In quantitative analyses, there was non-significant difference between received and provided emotional support for friends, whereas there was significant difference for family. This discrepancy in findings could be explained by the fact that we could not code for the sources or recipients of support for the qualitative data. If we were able to code separately for family and friends, mirroring the quantitative variables, the results might have differed.

We believe that the responses for emotional support reflected more closely the effects of being under a pandemic situation, in other words, being COVID-19-specific. Participants often mentioned being challenged with, and helping with, social distancing and uncertainty about the situation (*interpersonal responses to distress*): “reassured family that I am all right and will be okay so they will not worry. Reassured neighbors and friends that we can get through this and that we will be all right” (ID 126, female, age 60). However, in other cases, participants were seen simply trying to *promote social ties through positive interactions*: “simply staying in contact, either by phone, email, over the fence or middle of the street- checking in to make sure everyone is still doing ok” (ID 18, female, age 62). Then, there was *reciprocal support* where participants “shared” their concerns, frustration, and stories with their social partner. These three codes appeared most frequently in emotional support.

The category *domestic tasks* was most prevalent for both received and provided instrumental support. We believe this category is critical in understanding the effects of being under a pandemic situation in two ways. First, there is the expected instrumental support regarding the COVID-19 pandemic, such as grocery deliveries: “shopping for the neighbor, and preparing meals and taking them to two of our neighbors. One is 90, the other in her 80's and fell and broke her hip several months ago. She just got home from a care facility when this all began” (ID 28, female, age 68). Then, there is the unexpected sort of tasks that participants considered as social support: housework. Participants considered cooking and cleaning to be their support to their partner, or their partner's support for them. While these would be activities that they have engaged in the pre-pandemic era, it also could be interpreted that these activities increased in their salience in the pandemic era, when participants were required to socially distance and could not provide other kinds of instrumental support. Also, running the household



smoothly and maintaining the life structure they had before the pandemic may have become more important to participants. As one participant stated, “emotional support comes in varying degrees. With a spouse, it's listening, caring, trying to make things run smoothly, a hug or a kiss on the cheek” (ID 72, female, age 77). She perceived running things smoothly as emotional support, obviously aware of the emotional effects that instrumental support can have.

The first qualitative/mixed-method research question entailed comparing the frequency of code categories across age groups and gender groups. Participants were grouped into three age groups, the middle-aged (51-64), young-old (65-74), and old-old (75-95).

In the quantitative part of the study, we had hypothesized that both age and chronic illnesses would be positively related with more provided emotional support. These hypotheses were based on the assumption that providing emotional support would become more important to individuals who are limited in providing instrumental support. As a case in point, previous studies have argued for the possibility that individuals with limitations try to make up for what they cannot provide (e.g., instrumental support) with what they can provide (e.g., emotional support) (Boerner & Reinhardt, 2003). While quantitative analyses did not support these hypotheses, comparing frequency of support activities by age groups produced interesting results. While the total activities coded for provided emotional support exceeded those of received emotional support for all age groups, the old-old had the biggest difference between the two. This indicates that the old-old were providing more variety of support than they received, even compared to the younger groups. On the other hand, the total activities coded for received instrumental support for the old-old exceeded their number of provided instrumental support. Thus, the old-old may have been trying to compensate for the instrumental support they received but could not provide as much to others.

It should be noted that old-old groups received the least support in distressed situations, as noted by *interpersonal responses to distress*, in all three age groups, and that the middle-aged group received the most support in this code. This may be because the situation was simply more stressful for younger groups whose life structure differed from older groups, or the older groups had more sophisticated coping mechanisms, or that the older groups were more reluctant to show their distress to others. To elaborate, previous studies in the COVID-19 era have found that older adults may be less impacted than younger generations because their lifestyle, on average, is less active, having retired (Xiong et al., 2020). Researchers also have contemplated the possibility that older adults are better copers until the point where the stress exceeds their coping capacity (Barber & Kim, 2020; de Bruin, 2021).

Women reported receiving and providing more emotional support, in both the quantitative and qualitative/mixed-method analyses, which is in line with the larger social support literature (Barbee et al., 1993; Turner, 1994). However, there were only three activities that showed even marginally significant gender differences: females provided more *interpersonal responses in distress* and *gifts*, but males reported more *domestic tasks*. This may have happened because providing food was coded as *gifts*. As for *domestic tasks*, males may have perceived their role in household tasks as providing social support, and not their own responsibility, following conventional gender role expectations.

The second qualitative/mixed-method research question concerned if the variety of received and provided social support activities would be associated with the number of positive outcomes participants were able to find under the influence of the COVID-19 pandemic. Mirroring the quantitative analyses, the number of chronic illnesses were entered to represent

current limitations of older adults. For comparison purpose, we also included the number of social support network variety in the analysis.

The qualitative social support data had significant associations with positive outcomes whereas the quantitative social support data did not. While we had assumed and argued that it would be critical to emphasize the importance of providing emotional support as a productive activity, significant associations were shown only for received emotional support and provided instrumental support. This is consistent with Krause's (2007) finding that received emotional support from family and friends is associated with deeper meaning in life. As for provided instrumental support, it may have been more important for the participants because it was difficult to provide in this situation and as an at-risk group. In other words, participants could have appreciated themselves more, or achieved greater sense of meaning, when they succeeded in completing more difficult tasks for others. This interpretation corresponds with Ünal's (2020) finding that the need for efficacy, which could be achieved by completing difficult tasks, is associated with meaning in life.

Again, the significant associations between social support activities and positive outcomes, especially the one between providing instrumental social support and positive outcomes, validated the analytic model based on the hybrid model of optimal aging/successful aging controlling for current limitations. We conclude that providing more social support activities is associated with meaning in life, which argues for stressing the older adults' need for sense of meaning through providing support.

### **Limitations and Future Research**

This study has some limitations. First, we had a very well-educated sample, almost half of whom had a post-graduate degree. Thus, any generalization of these results to other

populations requires some degree of caution. It would be ideal if similar studies could take place with less privileged samples and samples in other countries, examining both quantitative (i.e., social support network variety and activity variety) and qualitative (i.e., social support satisfaction) social support and their relationships to optimal aging. For example, how would have a less healthy sample provided social support to others, in terms of amount and kinds? We have seen that providing instrumental support was associated with one facet of optimal aging. Then, what would more fragile older adults do when they have more difficulty providing instrumental support?

Second, the optimal aging as a latent construct used in the quantitative part of the study was not strong, the eigenvalue only explaining slightly more than the variance of one observed variable. This may have occurred because of the first limitation: this was a very healthy sample, where having either of the depressive, cognitive, and physical symptoms may be an irregular phenomenon. Again, using different samples and perhaps unifying the measures used for the outcome variables into Likert scales may help resolve this problem in future research.

Third, we cannot rule out the effect of personality in both quantitative and qualitative/mixed-method analyses. In other words, what we have measured as satisfaction with social support may be the propensity to perceive social support as satisfactory. Also, for qualitative data, those high in openness and extraversion may have indicated more activities of support and more positive outcomes – because they are pleasant individuals with more friends and more optimistic view of life. Future research will do well to include measures that can control for personality effects.

## CONCLUSION

This study was an attempt to disentangle the associations between many aspects of social support and optimal aging, with the COVID-19 pandemic being the common stressor variable. We believed that older adults were providers of social support as much as they were recipients of social support, and that providing support including emotional support could be considered as a productive activity that could contribute to optimal aging.

Despite the concerns in the literature that older adults were socially isolated, this was not the case for these well-educated sample who were clearly well-integrated into the community. This should not distract, however, from the very real suffering that may be experienced by older adults who are not as well-integrated into their social networks, or who are not satisfied with their social networks. For example, there was a participant who indicated that she had some social exchanges, but clearly, she was in distress and not satisfied with the social support she received: “emails back and forth with several friends and wife of brother (but no direct contact with him, sadly); texts with a friend or two; brief text with one son. Mostly am alone with no real support.” (ID 149, female, age 68). Thus, COVID-19 studies on those who perceived themselves to have been isolated are imperative, as this event may cause them detrimental effects for future health outcomes. Additionally, more studies on satisfaction with social support need to be conducted, not limited to COVID-19 studies.

Studying meaning, or, the development of sense of purpose in life, as one component of optimal aging framework may benefit from successful aging framework’s emphasis on social relations. Thoits (2011) discussed the concept of mattering as “one’s significance to other people”, connected to both social ties and purpose and meaning in life (p. 148). Thus, being embedded and integrated into social relations is one way that an individual can perceive that they

matter in this world and develop meaning in life. And within social relations, individuals not only receive, but provide.

We often forget that older adults are not born older adults. They were once children, adolescents, and then middle-aged adults, who achieved the role identity as providers of social support. Treating older adults only as recipients of social support is an act of neglecting this role identity, its salience in their lives, and consequently, the meaning in life they attain through this social role (see Thoits, 2012). We believe that this study showed, especially with the qualitative/mixed-method results, that older adults are providing as well as receiving social support.

As such, this study focused on older adults as providers of support, arguing that providing any kind of support could be considered as a productive activity. We partially fulfilled this goal with both quantitative and qualitative data, demonstrating that some aspects of provided support are associated with optimal aging. Additionally, we were able to critique three prominent theories regarding the effects of receiving and providing social support, arguing for the importance of considering satisfaction with social support receiving and providing.

It should be stressed that this study does not intend to criticize any population that cannot provide social support or the act of receiving social support itself. This was a simple attempt to identify another path that could link social support and well-being among various other paths that exist. Social support is about mattering, and what ultimately matters may be the love and caring embedded in the interactions that satisfies the individual, as one of our participants stated: “talking to others makes me feel less alone or isolated and also improves my sense of self-worth. Talking to my dog helps satisfy my need for companionship since I live alone. Interacting with

family, friends, and neighbors, as well as my dog, also make me feel loved” (ID 176, female, age 73).

## REFERENCES

- Adams, J. S. (1965). Inequity in social exchange. *Advances in Experimental Social Psychology*, 2, 267-299. [https://doi.org/10.1016/S0065-2601\(08\)60108-2](https://doi.org/10.1016/S0065-2601(08)60108-2)
- Adams, G. A., King, L. A., & King, D. W. (1996). Relationships of job and family involvement, family social support, and work-family conflict with job and life satisfaction. *Journal of Applied Psychology*, 81(4), 411–420. <https://doi.org/10.1037/0021-9010.81.4.411>
- Adams, K. B., Leibbrandt, S., & Moon, H. (2011). A critical review of the literature on social and leisure activity and wellbeing in later life. *Ageing & Society*, 31, 683-712. <https://doi.org/10.1017/S0144686X10001091>
- Agneessens, F., Waeye, H., & Lievens, J. (2006). Diversity in social support by role relations: A typology. *Social Networks*, 28(4), 427–441. <https://doi.org/10.1016/j.socnet.2005.10.001>
- Aldwin, C. M., Igarashi, H., Bengtson, V., & Settersten, R. A. (2016). Coping, optimal aging, and resilience in a sociocultural context. In V. L. Bengtson., R. A. Settersten., B. K. Kennedy., N. Morrow-Howell., & J. Smith (Eds.), *Handbook of theories of aging*, 3, 551-576. Springer Publishing Company, LLC.
- Almeida, D. M., Wethington, E., & Kessler, R. C. (2002). The daily inventory of stressful events: an interview-based approach for measuring daily stressors. *Assessment (Odessa, Fla.)*, 9(1), 41–55. <https://doi.org/10.1177/1073191102009001006>
- Anderson, N. D., Damianakis, T., Kröger, E., Wagner, L. M., Dawson, D. R., Binns, M. A., Bernstein, S., Caspi, E., Cook, S. L., & The BRAVO Team (2014). The benefits associated with volunteering among seniors: a critical review and recommendations for future research. *Psychological Bulletin*, 140, 1505–1533. <https://doi.org/10.1037/a0037610>



- Ang, S., & Malhotra, R. (2016). Association of received social support with depressive symptoms among older males and females in Singapore: Is personal mastery an inconsistent mediator? *Social Science & Medicine*, *153*, 165–173.  
<https://doi.org/10.1016/j.socscimed.2016.02.019>
- Antonucci, T. C. (1990). Social support and social relationships. In R. H. Binstock & L. K. George (Eds.), *Handbook of aging and the social sciences* (3rd ed., pp. 205-226). Academic Press.
- Antonucci, T. C., Ajrouch, K. J., & Birditt, K. S. (2014). The convoy model: Explaining social relations from a multidisciplinary perspective. *The Gerontologist*, *54*(1), 82–92.  
<https://doi.org/10.1093/geront/gnt118>
- Antonucci, T. C., & Akiyama, H. (1987). An examination of sex differences in social support among older men and women. *Sex Roles*, *17*(11-12), 737–749.  
<https://doi.org/10.1007/BF00287685>
- Antonucci, T. C., & Jackson, J. S. (1990). The role of reciprocity in social support. In I. G. Sarason., B. R. Sarason., & G. R. Pierce (Eds.), *Social Support: An Interactional View* (pp. 173-198). New York: John Wiley & Sons, Inc.
- ATLAS.ti version 22. ATLAS.ti Scientific Software Development GmbH, Berlin, Germany
- Attree, E. A., Dancy, C. P., Keeling, D., & Wilson, C. (2003). Cognitive function in people with chronic illness: inflammatory bowel disease and irritable bowel syndrome. *Applied neuropsychology*, *10*(2), 96-104. [https://doi.org/10.1207/S15324826AN1002\\_05](https://doi.org/10.1207/S15324826AN1002_05)
- Ayalon, L., Chasteen, A., Diehl, M., Levy, B., Neupert, S. D., Rothermund, K., Tesch- Römer, C., & Wahl, H.-W. (2020). Aging in times of the COVID-19 pandemic: Avoiding ageism

- and fostering intergenerational solidarity. [Editorial]. *The Journals of Gerontology: Series B*. <https://doi.org/10.1093/geronb/gbaa051>
- Ayotte, B. J., Altaire, J. C., & Whitfield, K. E. (2013). Social support, physical functioning, and cognitive functioning among older African American adults. *Aging, Neuropsychology, and Cognition*, 20(4), 494-510. <https://doi.org/10.1080/13825585.2012.761669>
- Baker, L. A., Cahalin, L. P., Gerst, K., & Burr, J. A. (2005). Productive activities and subjective well-being among older adults: the influence of number of activities and time commitment. *Social Indicators Research*, 73(3), 431–458.  
<https://doi.org/10.1007/s11205-005-0805-6>
- Baltes, P. B., & Baltes, M. M. (1990). Psychological perspectives on successful aging: The model of selective optimization with compensation. In P. B. Baltes & M. M. Baltes (Eds.), *Successful aging: Perspectives from the behavioral sciences* (pp. 1 – 34). New York: Cambridge University.
- Barbee, A. P., Cunningham, M. R., Winstead, B. A., Derlega, V. J., Gulley, M. R., Yankeelov, P. A., & Druen, P. B. (1993). Effects of gender role expectations on the social support process. *Journal of Social Issues*, 49(3), 175–190. <https://doi.org/10.1111/j.1540-4560.1993.tb01175.x>
- Barber, S. J., & Kim, H. (2021). COVID-19 worries and behavior changes in older and younger men and women. *The Journals of Gerontology: Series B*, 76(2). e17–e23.  
<https://doi.org/10.1093/geronb/gbaa068>
- Barrera, M. (1986). Distinctions between social support concepts, measures, and models. *American Journal of Community Psychology*, 14(4), 413–445.  
<https://doi.org/10.1007/BF00922627>

- Batson, C. D., & Powell, A. A. (2003). Altruism and prosocial behavior. In T. Millon & M. J. Lerner (Eds.), *Handbook of psychology: Personality and social psychology*, 5 (pp. 463–484). John Wiley & Sons, Inc. <https://doi.org/10.1002/0471264385.wei0519>
- Bengtsson, M. (2016). How to plan and perform a qualitative study using content analysis. *NursingPlus Open*, 2, 8–14. <https://doi.org/10.1016/j.npls.2016.01.001>
- Bergner, M., Bobbitt, R. A., Carter, W. B., & Gilson, B. S. (1981). The Sickness Impact Profile: development and final revision of a health status measure. *Medical care*, 19(8), 787–805. <https://doi.org/10.1097/00005650-198108000-00001>
- Berg-Weger, M., & Morley, J. E. (2020). Loneliness and social isolation in older adults during the COVID-19 pandemic: Implications for gerontological social work. [Editorial]. *The Journal of Nutrition, Health & Aging*, 24(5), 1–3. <https://doi.org/10.1007/s12603-020-1366-8>
- Birditt, K. S., Antonucci, T. C., & Tighe, L. (2012). Enacted support during stressful life events in middle and older adulthood: An examination of the interpersonal context. *Psychology and aging*, 27(3), 728. <https://10.1037/a0026967>
- Blazer, D., Burchett, B., Service, C., & George, L. K. (1991). The association of age and depression among the elderly: an epidemiologic exploration. *Journal of gerontology*, 46(6), M210-M215. <http://10.1093/geronj/46.6.m210>
- Boerner, K., & Reinhardt, J. P. (2003). Giving while in need: Support provided by disabled older adults. *The Journals of Gerontology: Series B*, 58(5), S297–S304. <https://doi.org/10.1093/geronb/58.5.S297>

- Brown, S. L., Nesse, R. M., Vinokur, A. D., & Smith, D. M. (2003). Providing social support may be more beneficial than receiving it: Results from a prospective study of mortality. *Psychological Science, 14*(4), 320–327. <https://doi.org/10.1111/1467-9280.14461>
- Bugg, J. M., Zook, N. A., DeLosh, E. L., Davalos, D. B., & Davis, H. P. (2006). Age differences in fluid intelligence: Contributions of general slowing and frontal decline. *Brain and cognition, 62*(1), 9-16. <https://10.1016/j.bandc.2006.02.006>
- Bui, B. K. H. (2020). The relationship between social network characteristics and depressive symptoms among older adults in the United States: Differentiating between network structure and network function. *Psychogeriatrics, 20*(4), 458–468. <https://doi.org/10.1111/psyg.12530>
- Calasanti, T. (2016). Combating ageism: How successful is successful aging? *The Gerontologist, 56*(6), 1093-1101. <https://10.1093/geront/gnv076>
- Cattell, R. B. (1966). The scree test for the number of factors. *Multivariate behavioral research, 1*(2), 245-276.
- Carstensen, L. L., Fung, H. H., & Charles, S. T. (2003). Socioemotional selectivity theory and the regulation of emotion in the second half of life. *Motivation and Emotion, 27*(2), 103–123. <https://doi.org/10.1023/A:1024569803230>
- Centers for Disease Control and Prevention. (2020, June 25). *Older adults*. <https://www.cdc.gov/coronavirus/2019-ncov/need-extra-precautions/older-adults.html>
- Chao, S. f. (2011). Assessing social support and depressive symptoms in older Chinese adults: A longitudinal perspective. *Aging & Mental Health, 15*(6), 765–774. <https://doi.org/10.1080/13607863.2011.562182>

- Chen, H. H., & Chien, L. Y. (2020). A comparative study of domestic decision-making power and social support as predictors of postpartum depressive and physical symptoms between immigrant and native-born women. *PloS one*, *15*(4), e0231340.  
<https://10.1371/journal.pone.0231340>
- Costa-Cordella, S., Arevalo-Romero, C., Parada, F. J., & Rossi, A. (2021). Social support and cognition: A systematic review. *Frontiers in Psychology*, *12*, 452.  
<https://10.3389/fpsyg.2021.637060>
- Costin, V., & Vignoles, V. L. (2020). Meaning is about mattering: Evaluating coherence, purpose, and existential mattering as precursors of meaning in life judgments. *Journal of Personality and Social Psychology*, *118*(4), 864-884. <https://10.1037/pspp0000225>
- Crohan, S. E., & Antonucci, T. C. (1989). Friends as a source of social support in old age. In R. G. Adams & R. Blieszner (Eds.), *Sage focus editions, Vol. 103. Older adult friendship: Structure and process* (p. 129–146). Sage Publications, Inc.
- Cutrona, C. E., & Suhr, J. A. (1992). Controllability of stressful events and satisfaction with spouse support behaviors. *Communication research*, *19*(2), 154-174.  
<https://10.1177/009365092019002002>
- Dakof, G. A. & Taylor, S. E. (1990). Victims' perceptions of social support: what is helpful from whom? *Journal of Personality and Social Psychology*, *58*(1), 80–89.  
<https://doi.org/10.1037/0022-3514.58.1.80>
- Dalmida, S. G., Koenig, H. G., Holstad, M. M., & Wirani, M. M. (2013). The psychological well-being of people living with HIV/AIDS and the role of religious coping and social support. *The International Journal of Psychiatry in Medicine*, *46*(1), 57–83.  
<https://doi.org/10.2190/PM.46.1.eax>

- de Bruin, W. B. (2021). Age differences in COVID-19 risk perceptions and mental health: Evidence From a national U.S. survey conducted in March 2020. *The Journals of Gerontology: Series B*, 76(2), e24–e29. <https://doi.org/10.1093/geronb/gbaa074>
- Depp, C., Vahia, I. V., & Jeste, D. (2010). Successful aging: Focus on cognitive and emotional health. *Annual Review of Clinical Psychology*, 6(1), 527–550. <https://doi.org/10.1146/annurev.clinpsy.121208.131449>
- Dickinson, W. J., Potter, G. G., Hybels, C. F., McQuoid, D. R., & Steffens, D. C. (2011). Change in stress and social support as predictors of cognitive decline in older adults with and without depression. *International journal of geriatric psychiatry*, 26(12), 1267-1274. <https://10.1002/gps.2676>
- Djundeva, M., Mills, M., Wittek, R., & Steverink, N. (2015). Receiving instrumental support in late parent–child relationships and parental depression. *The Journals of Gerontology: Series B*, 70(6), 981–994. <https://doi.org/10.1093/geronb/gbu136>
- Dowd, J. J. (1975). Aging as exchange: A preface to theory. *Journal of Gerontology*, 30(5), 584-594. <https://doi.org/10.1093/geronj/30.5.584>
- Dupertuis, L. L., Aldwin, C. M., & Bossé, R. (2001). Does the source of support matter for different health outcomes?: Findings from the Normative Aging Study. *Journal of Aging and Health*, 13(4), 494–510. <https://doi.org/10.1177/089826430101300403>
- Eaton, Frank, B., Johnson, K., & Willoughby, S. (2019). Comparing exploratory factor models of the Brief Electricity and Magnetism Assessment and the Conceptual Survey of Electricity and Magnetism. Physical Review. *Physics Education Research*, 15(2), 020133. <https://doi.org/10.1103/PhysRevPhysEducRes.15.020133>

- Ellwardt, L., Aartsen, M., Deeg, D., & Steverink, N. (2013). Does loneliness mediate the relation between social support and cognitive functioning in later life? *Social science & medicine*, 98, 116-124. <https://10.1016/j.socscimed.2013.09.002>
- Fernández-Ballesteros, R. (2005). Evaluation of “Vital Aging-M”: A psychosocial program for promoting optimal aging. *European Psychologist*, 10(2), 146-156. <https://10.1027/1016-9040.10.2.146>
- Friedmann, E., Son, H., Thomas, S. A., Chapa, D. W., & Lee, H. J. (2014). Poor social support is associated with increases in depression but not anxiety over 2 years in heart failure outpatients. *The Journal of Cardiovascular Nursing*, 29(1).  
<https://doi.org/10.1097/JCN.0b013e318276fa07>
- Friese, S. (2020). Measuring inter-coder agreement—Why Cohen’s Kappa is not a good choice. <https://atlasti.com/2020/07/12/measuring-inter-coder-agreement/>
- Fuller-Iglesias, H. R. (2015). Social ties and psychological well-being in late life: The mediating role of relationship satisfaction. *Aging & Mental Health*, 19(12), 1103–1112.  
<https://doi.org/10.1080/13607863.2014.1003285>
- George, L. S., & Park, C. L. (2017). The multidimensional existential meaning scale: A tripartite approach to measuring meaning in life. *The Journal of Positive Psychology*, 12(6), 613-627. <https://10.1080/17439760.2016.1209546>
- Gleason, M. E. J., & Bornstein, J. X. (2020). Social support and health. In R. H. Paul, L. E. Salminen, J. Heaps, & L. M. Cohen (Eds.), *The Wiley Encyclopedia of Health Psychology* (1st ed, pp 703–707). Wiley. <https://doi.org/10.1002/9781119057840.ch122>

- Glymour, M. M., Weuve, J., Fay, M. E., Glass, T., & Berkman, L. F. (2008). Social ties and cognitive recovery after stroke: Does social integration promote cognitive resilience? *Neuroepidemiology*, *31*(1), 10-20. <https://10.1159/000136646>
- Gottlieb, B. H., & Bergen, A. E. (2010). Social support concepts and measures. *Journal of Psychosomatic Research*, *69*(5), 511–520. <https://doi.org/10.1016/j.jpsychores.2009.10.001>
- Grey, I., Arora, T., Thomas, J., Saneh, A., Tohme, P., & Abi-Habib, R. (2020). The role of perceived social support on depression and sleep during the COVID-19 pandemic. *Psychiatry Research*, *293*, 113452. <https://doi.org/10.1016/j.psychres.2020.113452>
- Groarke, J. M., Berry, E., Graham-Wisener, L., McKenna-Plumley, P. E., McGlinchey, E., & Armour, C. (2020). Loneliness in the UK during the COVID-19 pandemic: Cross-sectional results from the COVID-19 Psychological Wellbeing Study. *PLOS ONE*, *15*(9), e0239698. <https://doi.org/10.1371/journal.pone.0239698>
- Gruenewald, T. L., & Seeman, T. E. (2010). Social support and physical health: Links and mechanisms. In A. Steptoe (Ed.), *Handbook of Behavioral Medicine* (pp. 225–236). Springer New York.
- Gurung, R. A. R., Taylor, S. E., & Seeman, T. E. (2003). Accounting for changes in social support among married older adults: Insights from the MacArthur Studies of Successful Aging. *Psychology and Aging*, *18*(3), 487–496. <https://doi.org/10.1037/0882-7974.18.3.487>
- Gur-Yaish, N., Zisberg, A., Sinoff, G., & Shadmi, E. (2013). Effects of instrumental and psychological support on levels of depressive symptoms for hospitalized older adults. *Aging & Mental Health*, *17*(5), 646–653. <https://doi.org/10.1080/13607863.2012.758234>



- Guttman, L. (1954). Some necessary conditions for common-factor analysis. *Psychometrika*, *19*, 149-161. <https://doi:10.1007/BF02289162>
- De Guzman, A. B., Jurado, J. B. N., & Juson, A. J. A. (2015). Examining the structural relationship of chronic illness, physical function, life satisfaction, and social support in the development of depression among Filipino elderly in institutionalized settings. *Educational Gerontology*, *41*(3), 193-206. <https://10.1080/03601277.2014.918836>
- Hansen-Kyle, L. (2005, April). A concept analysis of healthy aging. *Nursing Forum*, *40*(2), 45-57. <https://10.1111/j.1744-6198.2005.00009.x>
- Hayton, J. C., Allen, D. G., & Scarpello, V. (2011). Factor retention decisions in exploratory factor analysis: A tutorial on parallel analysis. *Organizational Research Methods*, *7*(2), 191–205. <https://doi.org/10.1177/1094428104263675>
- Havighurst, R. J. (1961). Successful aging. *The Gerontologist*, *1*, 8–13. <https://doi.org/10.1093/geront/1.1.8>
- Heckman, J. J. (1976). The common structure of statistical models of truncation, sample selection and limited dependent variables and a simple estimator for such models. *Annals of Economic and Social Measurement*, *5*, 475-492
- Heinze, J. E., Kruger, D. J., Reischl, T. M., Cupal, S., & Zimmerman, M. A. (2015). Relationships among disease, social support, and perceived health: A lifespan approach. *American Journal of Community Psychology*, *56*(3), 268–279. <https://doi.org/10.1007/s10464-015-9758-3>
- Henchoz, K., Cavalli, S., & Girardin, M. (2008). Health perception and health status in advanced old age: A paradox of association. *Journal of Aging Studies*, *22*(3), 282-290. <https://10.1016/j.jaging.2007.03.002>

- Heo, S., Lennie, T. A., Moser, D. K., & Kennedy, R. L. (2014). Types of social support and their relationships to physical and depressive symptoms and health-related quality of life in patients with heart failure. *Heart & Lung, 43*(4), 299–305.  
<https://doi.org/10.1016/j.hrtlng.2014.04.015>
- Hill, P. L., Sin, N. L., Almeida, D. M., & Burrow, A. L. (2020). Sense of purpose predicts daily positive events and attenuates their influence on positive affect. *Emotion*.  
<https://10.1037/emo0000776>
- Hinterlong, J., Morrow-Howell, N., & Sherraden, M. (2001). Productive aging: principles and perspectives. In N. Morrow-Howell, J. Hinterlong & M. Sherraden (Eds.), *Productive Aging: Concepts and Challenges* (pp. 3-18). Baltimore: The Johns Hopkins University Press.
- Hinterlong, J. E., Morrow-Howell, N., & Rozario, P. A. (2007). Productive engagement and late life physical and mental health: Findings from a nationally representative panel study. *Research on Aging, 29*(4), 348–370. <https://doi.org/10.1177/0164027507300806>
- Homans, G. C. (1958). Social behavior as exchange. *American Journal of Sociology, 63*, 597–606. <https://doi.org/10.1086/222355>
- Hopman, W. M., Harrison, M. B., Coo, H., Friedberg, E., Buchanan, M., & VanDenKerkhof, E. G. (2009). Associations between chronic disease, age and physical and mental health status. *Chronic Diseases in Canada, 29*(3), 108-16.
- Howard, A., Blakemore, T., & Bevis, M. (2017). Older people as assets in disaster preparedness, response, and recovery: Lessons from regional Australia. *Aging & Society, 37*(3), 1-20.  
<https://doi.org/10.1017/S0144686X15001270>

- Humphreys, L. G., & Montanelli Jr, R. G. (1975). An investigation of the parallel analysis criterion for determining the number of common factors. *Multivariate Behavioral Research*, 10(2), 193–205. [https://doi.org/10.1207/s15327906mbr1002\\_5](https://doi.org/10.1207/s15327906mbr1002_5)
- Hughes, T. F., Andel, R., Small, B. J., Borenstein, A. R., & Mortimer, J. A. (2008). The association between social resources and cognitive change in older adults: evidence from the Charlotte County Healthy Aging Study. *The Journals of Gerontology Series B: Psychological Sciences and Social Sciences*, 63(4), P241-P244. <https://10.1093/geronb/63.4.p241>
- Iacobucci, D., Ruvio, A., Román, S., Moon, S., & Herr, P. M. (2022). How many factors in factor analysis? New insights about parallel analysis with confidence intervals. *Journal of Business Research*, 139, 1026–1043. <https://doi.org/10.1016/j.jbusres.2021.09.015>
- Igarashi, H., Kurth, M. L., Lee, H. S., Choun, S., Lee, D., & Aldwin, C. M. (2021). Resilience in older adults during the COVID-19 pandemic: A socioecological approach. *The Journals of Gerontology: Series B*, 2021, gbab058, <https://doi.org/10.1093/geronb/gbab058>
- Jones, D. J., O'Connell, C., Gound, M., Heller, L., & Forehand, R. (2004). Predictors of self-reported physical symptoms in low-income, inner-city African American women: The role of optimism, depressive symptoms, and chronic illness. *Psychology of Women Quarterly*, 28(2), 112-121. <https://10.1111/j.1471-6402.2004.00128.x>
- Kahn, R.L., & Antonucci, T.C. (1980). Convoys over the life course: attachment, roles, and social support. *Life-Span Development and Behavior*, 3, 253–286.
- Kaul, M., & Lakey, B. (2003). Where is the support in perceived support? The role of generic relationship satisfaction and enacted support in perceived support's relation to low

distress. *Journal of Social and Clinical Psychology*, 22(1), 59–78.

<https://doi.org/10.1521/jscp.22.1.59.22761>

Kazis, L. E., Miller, D. R., Skinner, K. M., Lee, A., Ren, X. S., Clark, J. A., Rogers, W. H., Spiro, 3rd, Avron, Selim, A., Linzer, M., Payne, S. M., Mansell, D., & Fincke, R. G. (2004). Patient-reported measures of health: The Veterans Health Study. *The Journal of Ambulatory Care Management*, 27(1), 70–83. <https://doi.org/10.1097/00004479-200401000-00012>

Kennedy, B. K., Berger, S. L., Brunet, A., Campisi, J., Cuervo, A. M., Epel, E. S., ... & Sierra, F. (2014). Geroscience: Linking aging to chronic disease. *Cell*, 159(4), 709-713. <https://10.1016/j.cell.2014.10.039>

Kim, E. S., Tkatch, R., Martin, D., MacLeod, S., Sandy, L., & Yeh, C. (2021). Resilient Aging: Psychological Well-Being and Social Well-Being as Targets for the Promotion of Healthy Aging. *Gerontology and Geriatric Medicine*, 7, 23337214211002951. <https://doi.org/10.1177/23337214211002951>

Kim, H.-K., Hisata, M., Kai, I., & Lee, S.-K. (2000). Social support exchange and quality of life among the Korean elderly. *Journal of Cross-Cultural Gerontology*, 15(4), 331–347. <https://doi.org/10.1023/A:1006765300028>

Klein, N. (2017). Prosocial behavior increases perceptions of meaning in life. *The Journal of Positive Psychology*, 12(4), 354-361. <https://10.1080/17439760.2016.1209541>

Kong, L.-N., Zhu, W.-F., He, S., Yao, Y., & Yang, L. (2019). Relationships among social support, coping strategy, and depressive symptoms in older adults with diabetes. *Journal of Gerontological Nursing*, 45(4), 40–46. <https://doi.org/10.3928/00989134-20190305-03>

- Kotwal, A. A., Holt-Lunstad, J., Newmark, R. L., Cenzer, I., Smith, A. K., Covinsky, K. E., Escueta, D. P., Lee, J. M., & Perissinotto, C. M. (2021). Social isolation and loneliness among San Francisco Bay area older adults during the COVID-19 shelter-in-place orders. *Journal of the American Geriatrics Society*, *69*(1), 20–29.  
<https://doi.org/10.1111/jgs.16865>
- Krause, N. (1987). Satisfaction with social support and self-rated health in older adults. *The Gerontologist*, *27*(3), 301–308. <https://doi.org/10.1093/geront/27.3.301>
- Krause, N. (1999). Assessing change in social support during late life. *Research on Aging*, *21*(4), 539–569. <https://doi.org/10.1177/0164027599214002>
- Krause, N. (2007). Longitudinal study of social support and meaning in life. *Psychology and Aging*, *22*(3), 456. <https://10.1037/0882-7974.22.3.456>
- Krause, N., & Hayward, R. D. (2012). Religion, meaning in life, and change in physical functioning during late adulthood. *Journal of Adult Development*, *19*(3), 158-169.  
<https://10.1007/s10804-012-9143-5>
- Krause, N., & Rainville, G. (2020). Age differences in meaning in life: Exploring the mediating role of social support. *Archives of Gerontology and Geriatrics*, *88*, 104008.  
<https://10.1016/j.archger.2020.104008>
- Krippendorff. (2019). *Content analysis: an introduction to its methodology* (4th ed.). SAGE Publications, Inc.
- Kroemeke, A., & Gruszczynska, E. (2016). Well-being and institutional care in older adults: Cross-sectional and time effects of provided and received support. *PLOS ONE*, *11*(8), e0161328. <https://doi.org/10.1371/journal.pone.0161328>

- Kwon, K. H., & Moon, S.-I. (2012). Older adults' social support giving and their psychological health: Testing moderating effects of giving in familial and non-familial context. *Iowa Journal of Communication, 44*(1), 93-118.
- La Fleur, C. G., & Salthouse, T. A. (2017). Which aspects of social support are associated with which cognitive abilities for which people? *Journals of Gerontology Series B: Psychological Sciences and Social Sciences, 72*(6), 1006-1016.  
<https://10.1093/geronb/gbv119>
- Lamont, R. A., Nelis, S. M., Quinn, C., & Clare, L. (2017). Social support and attitudes to aging in later life. *The International Journal of Aging and Human Development, 84*(2), 109-125. <https://doi.org/10.1177/0091415016668351>
- Lang, F. R. & Carstensen, L. L. (1994). Close emotional relationships in late life. *Psychology and Aging, 9*(2), 315–324. <https://doi.org/10.1037/0882-7974.9.2.315>
- Lang, F. R., Staudinger, U. M, & Carstensen, L. L. (1998). Perspectives on socioemotional selectivity in late life: How personality and social context do (and do not) make a difference. *The Journals of Gerontology. Series B, Psychological Sciences and Social Sciences, 53B*(1), P21–P30. <https://doi.org/10.1093/geronb/53B.1.P21>
- LaRocca, M. A., & Scogin, F. R. (2015). The effect of social support on quality of life in older adults receiving cognitive behavioral therapy. *Clinical Gerontologist, 38*(2), 131–148.  
<https://doi.org/10.1080/07317115.2014.990598>
- Larsen, R. J., & Kasimatis, M. (1991). Day-to-day physical symptoms: Individual differences in the occurrence, duration, and emotional concomitants of minor daily illnesses. *Journal of Personality, 59*(3), 387-423. <https://10.1111/j.1467-6494.1991.tb00254.x>.

- Lesack, K., & Naugler, C. (2011). An open-source software program for performing Bonferroni and related corrections for multiple comparisons. *Journal of Pathology Informatics*, 2(1), 52–52. <https://doi.org/10.4103/2153-3539.91130>
- Li, C. (2013). Little's test of missing completely at random. *The Stata Journal*, 13(4), 795-809.
- Li, F., Luo, S., Mu, W., Li, Y., Ye, L., Zheng, X., Xu, B., Ding, Y., Ling, P., Zhou, M., & Chen, X. (2021). Effects of sources of social support and resilience on the mental health of different age groups during the COVID-19 pandemic. *BMC Psychiatry*, 21(1), 1-16. <https://doi.org/10.1186/s12888-020-03012-1>
- Li, H., Yang, J., & Chen, T. (2014). The roles of different sources of social support on emotional well-being among Chinese elderly. *PLoS One*, 9(3), e90051. <http://doi.org/10.1371/journal.pone.0090051>
- Liang, J., Krause, N. M., & Bennett, J. M. (2001). Social exchange and well-being: Is giving better than receiving? *Psychology and aging*, 16(3), 511-523. <https://doi.org/10.1037//0882-7974.16.3.511>
- Lin, J., & Yi, C. (2011). Filial norms and intergenerational support to aging parents in China and Taiwan. *International Journal of Social Welfare*, 20(S1), S109–S120. <https://doi.org/10.1111/j.1468-2397.2011.00824.x>
- Little, R. J. A. (1988). A test of missing completely at random for multivariate data with missing values. *Journal of the American Statistical Association*, 83(404), 1198-1202.
- Litwak, E., & Szelenyi, I. (1969). Primary group structures and their functions: Kin, neighbors, and friends. *American Sociological Review*, 34(4), 465–481. <https://doi.org/10.2307/2091957>

- Luchetti, M., Lee, J. H., Aschwanden, D., Sesker, A., Strickhouser, J. E., Terracciano, A., & Sutin, A. R. (2020). The trajectory of loneliness in response to COVID-19. *American Psychologist, 75*(7), 897–908. <https://doi.org/10.1037/amp0000690>
- Luo, H., Wong, G. H. Y., Tang, J. Y. M., Liu, T., Wong, F. H. C., Miu, A. C., Morrow-Howell, N., Cheng, S.-T., & Lum, T. Y. S. (2021). Perceived life expectancy predicts time investment in productive aging activities: An ecological momentary assessment study. *Research on Aging, 0164027521992690*. <https://doi.org/10.1177/0164027521992690>
- Martinson, M., & Berridge, C. (2015). Successful aging and its discontents: A systematic review of the social gerontology literature. *The gerontologist, 55*(1), 58-69. <https://10.1093/geront/gnu037>
- Martire, L. M., Schulz, R., Mittelmark, M. B., & Newsom, J. T. (1999). Stability and change in older adults' social contact and social support: The Cardiovascular Health Study. *The Journals of Gerontology Series B: Psychological Sciences and Social Sciences, 54B*(5), S302–S311. <https://doi.org/10.1093/geronb/54B.5.S302>
- McLaughlin, D., Leung, J., Pachana, N., Flicker, L., Hankey, G., & Dobson, A. (2012). Social support and subsequent disability: It is not the size of your network that counts. *Age and Ageing, 41*(5), 674–677. <https://doi.org/10.1093/ageing/afs036>
- McLaughlin, D., Vagenas, D., Pachana, N. A., Begum, N., & Dobson, A. (2010). Gender differences in social network size and satisfaction in adults in their 70s. *Journal of Health Psychology, 15*(5), 671–679. <https://doi.org/10.1177/1359105310368177>
- Merz, E.-M., & Consedine, N. S. (2009). The association of family support and well being in later life depends on adult attachment style. *Attachment & Human Development, 11*(2), 203–221. <https://doi.org/10.1080/14616730802625185>



- Midlarsky, E., & Kahana, E. (1994). *Altruism in Later Life*. Sage Publications, Inc.
- Midlarsky, E., & Kahana, E. (2007). Altruism, well-being, and mental health in late life. In S. G. Post (Ed.), *Altruism and health: perspectives from empirical research* (pp. 56–69). Oxford University Press.
- Millán-Calenti, J. C., Sánchez, A., Lorenzo-López, L., Cao, R., & Maseda, A. (2013). Influence of social support on older adults with cognitive impairment, depressive symptoms, or both coexisting. *The International Journal of Aging and Human Development*, 76(3), 199–214. <https://doi.org/10.2190/AG.76.3.b>
- Minahan, J., Falzarano, F., Yazdani, N., & Siedlecki, K. L. (2021). The COVID-19 pandemic and psychosocial outcomes across age through the stress and coping framework. *The Gerontologist*, 61(2), 228–239. <https://doi.org/10.1093/geront/gnaa205>
- Montpetit, M. A., Nelson, N. A., & Tiberio, S. S. (2017). Daily interactions and affect in older adulthood: family, friends, and perceived support. *Journal of Happiness Studies*, 18(2), 373–388. <https://doi.org/10.1007/s10902-016-9730-4>
- Morgan, J. N. (1986). Unpaid productive activity over the life course. In *Productive roles in an older society/Committee on an Aging Society, Institute of Medicine and National Research Council* (pp. 73–109). Washington, D.C.: National Academic Press.
- Nichter, B., Norman, S., Haller, M., & Pietrzak, R. H. (2019). Psychological burden of PTSD, depression, and their comorbidity in the U.S. veteran population: Suicidality, functioning, and service utilization. *Journal of Affective Disorders*, 256, 633–640. <https://doi.org/10.1016/j.jad.2019.06.072>
- Oddone, C. G., Hybels, C. F., McQuoid, D. R., & Steffens, D. C. (2011). Social support modifies the relationship between personality and depressive symptoms in older adults. *The*

*American Journal of Geriatric Psychiatry*, 19(2), 123–131.

<https://doi.org/10.1097/JGP.0b013e3181f7d89a>

Okabayashi, H., Liang, J., Krause, N., Akiyama, H., & Sugisawa, H. (2004). Mental health among older adults in Japan: Do sources of social support and negative interaction make a difference? *Social Science & Medicine*, 59(11), 2259–2270.

<https://doi.org/10.1016/j.socscimed.2004.02.024>

O'Rourke, N., Psych, R., & Hatcher, L. (2013). *A Step-By-Step Approach to Using SAS for Factor Analysis and Structural Equation Modeling*. SAS Institute.

Ostir, G. V., Simonsick, E., Kasper, J. D., & Guralnik, J. M. (2002). Satisfaction with support given and its association with subsequent health status. *Journal of Aging and Health*, 14(3), 355-369. <https://10.1177/08964302014003003>

Parslow, R. A., Lewis, V. J., & Nay, R. (2011). Successful aging: Development and testing of a multidimensional model using data from a large sample of older Australians. *Journal of the American Geriatrics Society*, 59(11), 2077-2083. <https://10.1111/j.1532-5415.2011.03665.x>.

Pietrzak, R. H., Tsai, J., Kirwin, P. D., & Southwick, S. M. (2014). Successful aging among older veterans in the United States. *The American Journal of Geriatric Psychiatry*, 22(6), 551-563. <https://10.1016/j.jagp.2012.11.018>

Piferi, R. L., & Lawler, K. A. (2006). Social support and ambulatory blood pressure: An examination of both receiving and giving. *International Journal of Psychophysiology*, 62(2), 328-336. <https://10.1016/j.ijpsycho.2006.06.002>

Pilkonis, P. A., Choi, S. W., Reise, S. P., Stover, A. M., Riley, W. T., Cella, D., & PROMIS Cooperative Group. (2011). Item banks for measuring emotional distress from the

- Patient-Reported Outcomes Measurement Information System (PROMIS®): Depression, anxiety, and anger. *Assessment*, 18(3), 263-283. <https://10.1177/107319111411667>
- Pinquart, M., & Sorensen, S. (2000). Influences of socioeconomic status, social network, and competence on subjective well-being in later life: A meta-analysis. *Psychology and Aging*, 15(2), 187-224. <https://doi.org/10.1037//0882-7974.15.2.187>
- Ployhart, R. E., & Ward, A. K. (2011). The “quick start guide” for conducting and publishing longitudinal research. *Journal of Business and Psychology*, 26(4), 413-422. <https://10.1007/s10869-011-9209-6>
- Pruchno, R., & Carr, D. (2017). Successful aging 2.0: Resilience and beyond. *The Journals of Gerontology: Series B*, 72(2), 201-203. <https://10.1093/geronb/gbw214>
- Rowe, J. W., & Kahn, R. L. (1987). Human aging: usual and successful. *Science*, 237(4811), 143-149. <https://10.1126/science.3299702>
- Rowe, J. W., & Kahn, R. L. (1997). Successful aging. *The Gerontologist*, 37(4), 433-440. <https://doi.org/10.1093/geront/37.4.433>
- Russell, A. R., Nyame-Mensah, A., de Wit, A., & Handy, F. (2019). Volunteering and wellbeing among ageing adults: A longitudinal analysis. *VOLUNTAS: International Journal of Voluntary and Nonprofit Organizations*, 30(1), 115–128. <https://doi.org/10.1007/s11266-018-0041-8>
- Ryff, C. D. (1989). Happiness is everything, or is it? Explorations on the meaning of psychological well-being. *Journal of personality and social psychology*, 57(6), 1069. <https://10.1037/0022-3514.57.6.1069>
- Ryff, C. D. (1995). Psychological well-being in adult life. *Current directions in psychological science*, 4(4), 99-104. <https://10.1111/1467-8721.ep10772395>

- Ryff, C. D., & Singer, B. (2009). Understanding healthy aging: Key components and their integration. In V. L. Bengtson, D. Gans, N. M. Pulney, & M. Silverstein (Eds.), *Handbook of theories of aging* (pp. 117–144). Springer Publishing Company.
- Sabbath, E. L., Matz-Costa, C., Rowe, J. W., Leclerc, A., Zins, M., Goldberg, M., & Berkman, L. F. (2016). Social predictors of active life engagement: A time-use study of young-old French adults. *Research on Aging, 38*(8), 864–893.  
<https://doi.org/10.1177/0164027515609408>
- Sagherian, K., Rose, K., Zhu, S., Byon, H. D., & Crawford, K. (2021). Productive activities but not paid work relate to well-being in older adults. *Research in Gerontological Nursing, 14*(1), 24–32. <https://doi.org/10.3928/19404921-20201124-02>
- Salthouse, T. A. (2004). What and when of cognitive aging. *Current directions in psychological science, 13*(4), 140–144. <https://10.1111/j.0963-7214.2004.00293.x>
- Salthouse, T. A. (2010). Selective review of cognitive aging. *Journal of the International Neuropsychological Society, 16*(5), 754–760. <https://10.1017/S1355617710000706>
- Santini, Z. I., Koyanagi, A., Tyrovolas, S., Mason, C., & Haro, J. M. (2015). The association between social relationships and depression: A systematic review. *Journal of Affective Disorders, 175*, 53–65. <https://doi.org/10.1016/j.jad.2014.12.049>
- Sargent, L., Flattery, M., Shah, K., Price, E. T., Tirado, C., Oliveira, T., Starkweather, A., & Salyer, J. (2020). Influence of physiological and psychological factors on cognitive dysfunction in heart failure patients. *Applied Nursing Research, 56*, 151375–151375.  
<https://doi.org/10.1016/j.apnr.2020.151375>
- SAS OnDemand for Academics. SAS Institute Inc., Cary, NC, USA

- Savalei. (2019). A Comparison of several approaches for controlling measurement error in small samples. *Psychological Methods, 24*(3), 352–370. <https://doi.org/10.1037/met0000181>
- Scholz, U., Kliegel, M., Luszczynska, A., & Knoll, N. (2012). Associations between received social support and positive and negative affect: Evidence for age differences from a daily-diary study. *European Journal of Ageing, 9*(4), 361–371. <https://doi.org/10.1007/s10433-012-0236-6>
- Seeman, T. E., Lusignolo, T. M., Albert, M., & Berkman, L. (2001). Social relationships, social support, and patterns of cognitive aging in healthy, high-functioning older adults: MacArthur studies of successful aging. *Health psychology, 20*(4), 243-255. <https://10.1037//0278-6133.20.4.243>
- Sharma, A. (2021). Estimating older adult mortality from COVID-19. *The Journals of Gerontology: Series B, 76*(3), e68–e74. <https://doi.org/10.1093/geronb/gbaa161>
- Sherraden, M., Morrow-Howell, N., Hinterlong, J., & Rozario, P. (2001). Productive aging: theoretical choices and directions. In N. Morrow-Howell, J. Hinterlong & M. Sherraden (Eds.), *Productive Aging: Concepts and Challenges* (pp. 260-284). Baltimore: The Johns Hopkins University Press.
- Shumaker, S. A., & Brownell, A. (1984). Toward a theory of social support: Closing conceptual gaps. *Journal of Social Issues, 40*(4), 11–36. <https://doi.org/10.1111/j.1540-4560.1984.tb01105.x>
- Siedlecki, K. L., Salthouse, T. A., Oishi, S., & Jeswani, S. (2014). The relationship between social support and subjective well-being across age. *Social Indicators Research, 117*(2), 561–576. <https://doi.org/10.1007/s11205-013-0361-4>

- Siegrist, J., Von dem Knesebeck, O., & Pollack, C. E. (2004). Social productivity and well-being of older people: A sociological exploration. *Social Theory & Health*, 2(1), 1-17.  
<https://10.1057/palgrave.sth.8700014>
- Silverstein, M., Chen, X., & Heller, K. (1996). Too much of a good thing? Intergenerational social support and the psychological well-being of older parents. *Journal of Marriage and Family*, 58(4), 970–982. <https://doi.org/10.2307/353984>
- Sin, N. L., Klaiber, P., Wen, J. H., & DeLongis, A. (2021). Helping amid the pandemic: Daily affective and social implications of COVID-19-related prosocial activities. *The Gerontologist*, 61(1), 59–70. <https://doi.org/10.1093/geront/gnaa140>
- Stewart, A. L., Ware, J., Sherbourne, C. D., & Wells, K. B. (1992). Psychological distress/well-being and cognitive functioning measures. *Measuring functioning and well-being: The medical outcomes study approach*, 102-142. Duke University Press.
- Strassburger, & Bretz, F. (2008). Compatible simultaneous lower confidence bounds for the Holm procedure and other Bonferroni-based closed tests. *Statistics in Medicine*, 27(24), 4914–4927. <https://doi.org/10.1002/sim.3338>
- Strawbridge, W. J., Wallhagen, M. I., & Cohen, R. D. (2002). Successful aging and well-being: Self-rated compared with Rowe and Kahn. *The Gerontologist*, 42(6), 727-733.  
<https://10.1093/geront/42.6.727>
- Stringa, N., Milaneschi, Y., van Schoor, N. M., Suanet, B., van der Lee, S., Holstege, H., Reinders, M. J. T., Beekman, A. T. F., & Huisman, M. (2020). Genetic liability for depression, social factors and their interaction effect in depressive symptoms and depression over time in older adults. *The American Journal of Geriatric Psychiatry*, 28(8), 844–855. <https://doi.org/10.1016/j.jagp.2020.02.011>

- Suanet, B., & Antonucci, T. C. (2017). Cohort differences in received social support in later life: The role of network type. *The Journals of Gerontology: Series B*, 72(4), 706–715.  
<https://doi.org/10.1093/geronb/gbw075>
- Tampubolon, G., & Maharani, A. (2017). When did old age stop being depressing? Depression trajectories of older Americans and Britons 2002–2012. *The American Journal of Geriatric Psychiatry*, 25(11), 1187–1195. <https://10.1016/j.jagp.2017.06.006>
- Taylor, R. J., Chatters, L. M., & Mays, V. M. (1988). Parents, children, siblings, in-laws, and non-kin as sources of emergency assistance to black Americans. *Family Relations*, 37(3), 298–304. <https://doi.org/10.2307/584566>
- Taylor, S. E. (2011). Social support: A review. In H. S. Friedman (Ed.), *Oxford library of psychology. The Oxford handbook of health psychology* (p. 189–214). Oxford University Press.
- Taylor, J., & Turner, R. J. (2001). A longitudinal study of the role and significance of mattering to others for depressive symptoms. *Journal of Health and Social Behavior*, 42(3), 310–325. <https://doi.org/10.2307/3090217>
- Teater, B., & Chonody, J. (2020). Reconsidering how successful aging is defined: Perspectives from community-dwelling aging adults. *Advances in Social Work*, 20(3), 694–708.
- Thang, L. L., Lim, E., & Tan, S. L.-S. (2019). Lifelong learning and productive aging among the baby-boomers in Singapore. *Social Science & Medicine*, 229, 41–49.  
<https://doi.org/10.1016/j.socscimed.2018.08.021>
- Thoits, P. A. (2011). Mechanisms linking social ties and support to physical and mental health. *Journal of Health and Social Behavior*, 52(2), 145–161.  
<https://doi.org/10.1177/0022146510395592>

- Thoits, P. A. (2012). Role-identity salience, purpose and meaning in life, and well-being among volunteers. *Social Psychology Quarterly*, 75(4), 360–384.  
<https://doi.org/10.1177/0190272512459662>
- Thomas, P. A. (2010). Is it better to give or to receive? Social support and the well-being of older adults. *The Journals of Gerontology: Series B*, 65B(3), 351–357.  
<https://doi.org/10.1093/geronb/gbp113>
- Turner, H. A. (1994). Gender and social support: Taking the bad with the good? *Sex Roles*, 30(7), 521-541.
- Turner, J., & Kelly, B. (2000). Emotional dimensions of chronic disease. *Western Journal of Medicine*, 172(2), 124. <https://10.1136/ewjm.172.2.124>
- Tyrrell, C. J., & Williams, K. N. (2020). The paradox of social distancing: Implications for older adults in the context of COVID-19. *Psychological Trauma: Theory, Research, Practice, and Policy*, 12(S1), S214. <https://doi.org/10.1037/tra0000845>
- Ullman, J. B. (2006). Structural equation modeling: Reviewing the basics and moving forward. *Journal of Personality Assessment*, 87(1), 35–50.  
[https://doi.org/10.1207/s15327752jpa8701\\_03](https://doi.org/10.1207/s15327752jpa8701_03)
- Ünal, Z. M. (2020). Will to live: The fulfillment of needs for meaning and its relation to meaning in life. *Istanbul Gelişim Üniversitesi sosyal bilimler dergisi*, 7(2), 364–380.  
<https://doi.org/10.17336/igusbd.478385>
- Uno, D., Uchino, B. N., & Smith, T. W. (2002). Relationship quality moderates the effect of social support given by close friends on cardiovascular reactivity in women. *International Journal of Behavioral Medicine*, 9(3), 243–262.  
[https://doi.org/10.1207/S15327558IJBM0903\\_06](https://doi.org/10.1207/S15327558IJBM0903_06)



- van Tilburg, T. (1998). Losing and gaining in old age: Changes in personal network size and social support in a four-year longitudinal study. *Journal of Gerontology: Social Sciences*, 53B(6), S313–S323. <https://10.1093/geronb/53B.6.S313>
- Walster, E., Walster, G. W., & Berscheid, E. (1978). *Equity: Theory and Research*. Allyn and Bacon.
- Wan, W. H., & Antonucci, T. C. (2017). Social exchange theory and aging. In N. A. Pachana (Ed.), *Encyclopedia of Geropsychology*. Springer, Singapore.  
<https://doi.org/10.1007/978-981-287-082-7>
- Warner, L. M., Schüz, B., Wurm, S., Ziegelmann, J. P., & Tesch-Römer, C. (2010). Giving and taking—Differential effects of providing, receiving and anticipating emotional support on quality of life in adults with multiple illnesses. *Journal of Health Psychology*, 15(5), 660–670. <https://doi.org/10.1177/1359105310368186>
- Warwick, R., Joseph, S., Cordle, C., & Ashworth, P. (2004). Social support for women with chronic pelvic pain: What is helpful from whom? *Psychology & Health*, 19(1), 117–134.  
<https://doi.org/10.1080/08870440310001613482>
- Whitfield, K. E., & Wiggins, S. (2003). The influence of social support and health on everyday problem solving in adult African Americans. *Experimental aging research*, 29(1), 1-13.  
<https://doi.org/10.1080/03610730303703>
- Xiong, J., Lipsitz, O., Nasri, F., Lui, L. M. W., Gill, H., Phan, L., Chen-Li, D., Iacobucci, M., Ho, R., Majeed, A., & McIntyre, R. S. (2020). Impact of COVID-19 pandemic on mental health in the general population: A systematic review. *Journal of Affective Disorders*, 277, 55–64. <https://doi.org/10.1016/j.jad.2020.08.001>

- Zajacova, A., & Lawrence, E. M. (2018). The relationship between education and health: reducing disparities through a contextual approach. *Annual review of public health, 39*, 273-289. <https://doi.org/10.1146/annurev-publhealth-031816-044628>
- Zysberg, L., & Zisberg, A. (2020). Days of worry: Emotional intelligence and social support mediate worry in the COVID-19 pandemic. *Journal of Health Psychology, 1359105320949935*. <https://doi.org/10.1177/1359105320949935>

## APPENDIX A

### Coping with the COVID-19 Pandemic Survey

#### SECTION A: PLEASE TELL US A LITTLE ABOUT YOURSELF

A1. What is today's date?     \_\_\_/\_\_\_/\_\_\_\_\_     (MM/DD/YY)

A2. What year were you born?     \_\_\_\_\_     (YYYY)

A3. What is your gender?    Male    Female    Other \_\_\_\_\_

A4. What is the highest degree or level of school you have completed?

- |   |  |
|---|--|
| <input type="checkbox"/> Less than high school diploma      | <input type="checkbox"/> Bachelor's degree (e.g., BA, BS)    |
| <input type="checkbox"/> High school diploma / GED          | <input type="checkbox"/> Master's degree (e.g., MA, MS, MBA) |
| <input type="checkbox"/> Some college credit, but no degree | <input type="checkbox"/> Professional or Doctorate degree    |
| <input type="checkbox"/> Associate's degree (e.g., AA, AS)  |  |

A5. Are you Spanish, Hispanic, or Latinx?      No    Yes

A6. What is your race? (*Check all that apply*)

- |  |   |
|--|---|
| <input type="checkbox"/> White                           | <input type="checkbox"/> Asian            |
| <input type="checkbox"/> Black / African-American        | <input type="checkbox"/> Pacific Islander |
| <input type="checkbox"/> American Indian / Alaska Native | <input type="checkbox"/> Other            |

A7. What is your *current* marital status?

- |   |   |
|---|---|
| <input type="checkbox"/> Married          | <input type="checkbox"/> Never married      |
| <input type="checkbox"/> Civil commitment | <input type="checkbox"/> Widowed            |
| <input type="checkbox"/> Cohabiting       | <input type="checkbox"/> Separated/divorced |

A8. What is your employment status?

- Retired, not working      Working full time      Laid off within past 3 months

- Retired, working part-time    Working part-time    Unemployed for 3 months or longer  
 Retired, working full time    Self-employed    Homemaker  
 Student

A9. Including yourself, how many people currently live in your household?

- 1   2   3   4   5   6   7   8   9+

A10. Who lives in your household (check all that apply)

- Spouse/Partner    Other relatives    Caretaker/caregiver  
 Children    Friends    Other \_\_\_\_\_  
 Grandchildren    Renters

A11. Where do you live now?

- Own home/condo    Board & care facility  
 Rental home/condo/apartment    Assisted living facility  
 Family member's home    Skilled nursing facility  
 Friend's home    Other \_\_\_\_\_

A12. What is your zip code? \_\_\_\_\_

A13. Do you have a religious affiliation?

- None    Catholic    Protestant    Non-denominational    Jewish    Buddhist    Muslim

Other

A14. Within your religious or spiritual tradition, how often do you pray or meditate?

- Never    1-2x/year    monthly    1-2 x/month    Weekly    Daily

A15. Are you a veteran?    No    Yes

If yes:

A15a. When did you serve? Start date \_\_\_\_\_ End date: \_\_\_\_\_

A15b. Did you serve in combat?  Yes  No

## SECTION B: HEALTH

B1. In general, would you say your health is:

Poor  Fair  Good  Very good  Excellent

B2. How tall are you? \_\_\_\_\_ feet \_\_\_\_\_ inches

B3. How much do you weigh? \_\_\_\_\_ (lbs)

B4. Do you have any chronic health conditions? (Check all that apply.)

- Respiratory problems (e.g., asthma, chronic bronchitis, COPD, lung cancer)
- Heart disease
- Hypertension
- Diabetes
- Cancer (specify: \_\_\_\_\_)
- Compromised immune function (e.g., rheumatoid arthritis, multiple sclerosis)

B5. Do you use tobacco products (e.g., cigarettes, e-cigarettes, smokeless, vape)?

No (*Skip to B6*)  Former tobacco user  Yes If Yes,

B5a. How many cigarettes (or equivalent) do you smoke per day now?

- Less than 1/2 pack (fewer than 6)
- 1/2 pack (6 - 15)
- 1 pack (16 - 25)

- 2 packs (26 - 50)
- More than 2 packs

B6. Do you drink alcohol (beer, wine and/or liquor)?

- Yes, I currently drink alcohol
- No, but I used to drink alcohol
- No, I have never drunk alcohol (*Skip to B8*)

B7. In a typical month, what is/was the average number of drinks of alcohol (beer, wine and/or liquor) you may have had in one day? By a drink we mean half an ounce of absolute alcohol (e.g. a 12 ounce can or glass of beer or cooler, a 5 ounce glass of wine, or a drink containing 1 shot of liquor).

- Less than 1
- 1 drink
- 2 drinks
- 3 drinks
- 4 drinks
- 5 - 6 drinks
- 7 - 9 drinks
- 10 - 14 drinks
- 15 or more drinks

B8. How many hours do you usually sleep each day (24-hour period)?

- 5 or less    6    7    8    9    10 or more

B9. Have you had any of the following sleep problems at least half the days of the past week?

(Check all that apply.)

- Trouble falling asleep when you first go to bed
- Waking up during the night and not easily going back to sleep
- Waking up in the morning earlier than planned or desired



recently, where you put things, and/or appointments?						
Have trouble keeping your attention on any activity for very long?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
React slowly to things that were said or done?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

B12. In the past 7 days,

	Never	Rarely	Sometimes	Often	Always
I felt fearful	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I felt worthless	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I found it hard to focus on anything other than my anxiety	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I felt helpless	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
My worries overwhelmed me	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I felt depressed	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I felt uneasy	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I felt hopeless	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I felt nervous	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I felt like a failure	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>



I felt like I needed help for my anxiety	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I felt unhappy	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

B13. Please indicate the extent to which you agree or disagree with the following statements.

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
I tend to bounce back quickly after hard times	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I have a hard time making it through stressful events.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
It does not take me long to recover from a stressful event.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
It is hard for me to snap back when something bad happens.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I usually come through difficult times with little trouble.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I tend to take a long time to get over set-backs in my life.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

B14. In the past 7 days, did you experience any of the following physical symptoms? (Check all that apply.)

- |  |   |
|--|---|
| <input type="checkbox"/> Headache              | <input type="checkbox"/> Heart Pounding       |
| <input type="checkbox"/> Constipation/Diarrhea | <input type="checkbox"/> Nausea/Upset Stomach |
| <input type="checkbox"/> Muscle soreness       | <input type="checkbox"/> Hot or Cold Flashes  |
| <input type="checkbox"/> Shortness of Breath   | <input type="checkbox"/> Poor appetite        |
| <input type="checkbox"/> Tightness in chest    | <input type="checkbox"/> Congestion           |
| <input type="checkbox"/> Trembling/Shaking     | <input type="checkbox"/> Sore Throat          |
| <input type="checkbox"/> Backache              | <input type="checkbox"/> Dizziness            |
| <input type="checkbox"/> Joint Pain            | <input type="checkbox"/> Cough                |

B15. In the past week, how often did you do physical activities either indoors or outdoors? If you did do some exercise, please indicate the number of days and length of exercise period.

Vigorous exercise: Causes your heart to beat so rapidly you can feel it in your chest and you perform it long enough to work up a good sweat and breathe heavily (e.g., running)

Moderate exercise: Causes your heart rate to increase slightly and you typically work up a sweat (e.g., brisk walking, mowing the lawn with a walking lawnmower)

Light exercise: Requires little physical effort (e.g., laundry, easy walking).

Type of Exercise	No	Yes	How many days in the past week?	About how long each time?
Vigorous: outdoor				____ Hrs ____ Mns
indoor				____ Hrs ____ Mns

Moderate: outdoor				_____ Hrs _____ Mns
indoor				_____ Hrs _____ Mns
Light: outdoor				_____ Hrs _____ Mns
Light: indoor				_____ Hrs _____ Mns

## SECTION C. Coping with COVID-19

C1. Do you seek out information about COVID-19?  No  Yes If Yes,

C1a. What are your sources? (Check all that apply.)

- Television
- Radio
- Newspapers
- Government or public health websites
- Social media (e.g., Facebook, Twitter, Instagram, Snapchat)

C2. Among people you know *personally*, has anyone:

Tested positive for COVID-19?  No  Yes

Been hospitalized for COVID-19?  No  Yes

Died from the COVID-19 virus?  No  Yes

C3. How likely do think you are to come down with the COVID-19 virus?

Please rate your probability (0% - 100%): \_\_\_\_\_

C4. Have you sought COVID-19 testing?  No  Yes If Yes,

C4a. Were you able to obtain it?  No  Yes If Yes,

C4b. Was it:  Negative  Positive  Waiting to get result

C5. In the past week, are you using (check all that apply)

- Social / physical distancing (limiting social contact)
- Shelter in place / lockdown / mandated staying at home

C6. In the past week, how often did you leave your home?

- Daily    Every two-three days    Once or twice a week    Very little or not at all

C6a. On average, how long are you out each time?

- < 1 hour    1-2 hours    3-5 hours    6-8 hours    > 8 hours

C6b. For what reasons do you leave? (Check all that apply)

- Getting essentials (groceries, medications)
- Walking the dog or walking in the neighborhood
- Moderate exercise (running, biking, hiking, canoeing, kayaking)
- Taking care of someone who doesn't live with me
- Going to work
- Volunteering
- Socializing
- Eating out
- Getting take-out
- Religious services
- Seeking medical care for self or loved one
- Yardwork, gardening, home maintenance

C8. In the past week, how often did you do protective behaviors or use protective equipment?

	Not at all	Occasionally	Frequently
Handwashing	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>



Your child(ren)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Your grandchild(ren)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other family member	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Friend	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Neighbor	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Coworker	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Medical personnel	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Volunteer	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Paid help	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Someone else:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

D2. In the past week, did you *receive* support from anyone, either emotional (e.g. listening to or comforting you) or practical help (e.g., help with a task)? Check all that apply and indicate type of support.

Person	No	Yes	Emotional Support	Practical Help
Your spouse	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Your child(ren)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Your grandchild(ren)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Other family member	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Friend	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Neighbor	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Coworker	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Medical personnel	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Volunteer	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Paid help	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Pet(s)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Someone else: _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

D2a. Briefly describe the emotional support you received: \_\_\_\_\_

\_\_\_\_\_

D2b. All in all, how satisfied were you with the emotional support?

Not at all satisfied    Somewhat dissatisfied    Mixed    Somewhat satisfied    Very satisfied

D2c. Briefly describe the practical help you received: \_\_\_\_\_

\_\_\_\_\_

D2d. All in all, how satisfied were you with the practical help you received?

Not at all satisfied    Somewhat dissatisfied    Mixed    Somewhat satisfied    Very satisfied

D3. In the past week, did you *provide* emotional support (e.g. listening to or comforting them) or practical help (e.g., help with a task) to anyone?

Person	Yes	Emotional Support	Practical Help
Your spouse	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Your child(ren)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Your grandchild(ren)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other family member	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Friend	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Neighbor	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Coworker	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Medical personnel	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Volunteer	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Paid help	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Someone else: _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

D3a. Briefly describe the emotional support you provided: \_\_\_\_\_

---

D3b. All in all, how satisfied were you with the emotional support you provided?

Not at all satisfied    Somewhat dissatisfied    Mixed    Somewhat satisfied    Very satisfied

D3c. Briefly describe the practical help you provided: \_\_\_\_\_

---

D3d. All in all, how satisfied were you with the practical help you provided?



Not at all satisfied    Somewhat dissatisfied    Mixed    Somewhat satisfied    Very satisfied

D4. In terms of your overall social support, please indicate how strongly you agree or disagree with the following statements:

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
There are plenty of people I can rely on when I have problems	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I miss having people around me	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I often feel rejected	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I experience a general sense of emptiness	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
There are many people I can trust completely	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
There are enough people I feel close to	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

D5. In the past 7 days, have you had problems any of the following? If yes, please rate on a scale of 1-7, where 1 = Not at all stressful and 7 = Extremely stressful

Type of problem	No	Yes	If yes, how stressful was it?
Your health	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/> 6 <input type="checkbox"/> 7
Your Spouse/partner	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/> 6 <input type="checkbox"/> 7

Other relationships (family, friends)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/> 6 <input type="checkbox"/> 7
Work or volunteer	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/> 6 <input type="checkbox"/> 7
Finances	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/> 6 <input type="checkbox"/> 7
Retirement	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/> 6 <input type="checkbox"/> 7

D6. In the past 7 days, have you had positive experiences with any of the following? If yes, please rate on a scale of 1-7, where 1 = Not at all positive and 7 = Extremely positive

Type of experience	No	Yes	If yes, how positive was it?
Your health	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/> 6 <input type="checkbox"/> 7
Your Spouse/partner	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/> 6 <input type="checkbox"/> 7
Other relationships (family, friends)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/> 6 <input type="checkbox"/> 7
Work or volunteer	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/> 6 <input type="checkbox"/> 7
Finances	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/> 6 <input type="checkbox"/> 7
Retirement	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/> 6 <input type="checkbox"/> 7

D7. During the past week, what was the most difficult thing for you about the COVID-19 situation?

D7a. How did you cope with this specific problem? \_\_\_\_\_

D7b. Given the circumstances, how did you feel you handled this problem overall?

Not well at all     Adequately     Very well

Not too well     Fairly well

D8. During the past week, have your prior experiences influenced how you're dealing with the COVID-19 situation?    No    Yes    If yes, explain

D9. During the past week, did anything positive come about because of the COVID-19 situation?    No    Yes    If yes, explain

Thank you for your time!!

## APPENDIX B

### List of Open Codes and Code Descriptions

**Table 1**

*Open Codes for Emotional Support*

Received Emotional	Provided Emotional
a spiritual reading	acknowledging
acknowledging	acknowledging presence
advice	advice
affection	advice for friends re:COVID
appointment with therapist	advice on computer matters
appreciation	advice on cooking
availability	affection
being appreciated	answering questions
being supportive	appreciation with overwhelmed restaurant worker
being there for each other	asking questions
being understood	asking them what they think might be good solutions
being willing to receive	assuring that we will all get through these trying times
encouragement	availability
biking together	availability to listen
birthday celebration	availability to talk
book and movie recommendations	being a loyal and loving family member and friend
catching up	being available
caring	being available to listen
caring and showing it	being present
celebration over zoom	being supportive
checking in	being supportive of acute back pain
comforting	being there
commiserating	being there for each other
communicating	being understanding
companionship	birthday greetings to friends who would be celebrating home alone
comparing notes	celebrating home alone
comparing situations	careful listening
compliments	caring
conversation	catching up on their situations
conversation (improved sense of self-worth)	celebration
conversation about grief	checking in
cooking via videochat	checking in for well-being

discussing COVID future possibilities	cheering people up
discussing current situation	cheering son on
discussing current situation (staying at home)	comfort
discussing future plans	comforting after loss
discussing ideas about staying safe	comforting during medical situation re:COVID
discussing news	commiserating
discussing worries and hopes	communicating
dreaming about future	companionship
encouraging	comparing situations
encouraging conversations	connecting with others
encouraging information	console
encouraging scripture	contact
entertainment	conversation
exercise	conversation about being safe
friendship	conversation about daily living
getting advice	conversation about everyday things
gifts	conversation about experiences with the virus
group-texting	conversation about friend's daughter in law breast cancer surgery
hearing a friendly voice	conversation about neighbors' wife radiation treatments
helping processing	counselling
helping processing feelings	cuddling
helping with feelings	daily communication
helping with reappraisal	discussing COVID
hugging	discussing current situations
hugging	discussing effects of social distancing
humor	discussing family health
humor (partner)	discussing how "we" (city, state, etc.) can better come out of this
information	discussing social distancing at work
initiating communication	discussing stay at home issues
insight	discussing use of masks
just being friendly	discussing virus
kisses	discussing ways to make it through these times
learning how others are coping	discussion
links to meditation podcast	distraction
listening	emotion processing
listening to complaints	emotional exchange
listening to venting	empathize with anxiety and feelings of isolation
looking forward to seeing each other	empathy
making the most of the situation	encouragement

moral support	encouraging friends re:COVID
mutual reassurance	encouraging them in their Christian faith and turn this situation into an opportunity for good
mutual venting	exchanging feelings
offers of help	exchanging routines
online workouts	exchanging thoughts
online yoga class	expressing affection
perceived support is available	friendship
pet -- being able to talk	goody box
pet -- care providing structure	group texting
pet -- caring for pet	having positive attitude
pet -- comfort	help people coping with stress
pet -- companionship	help people stay centered
pet -- entertainment	helping with depression, anxiety, and upset about the virus issues
pet -- feels good from physical affection	hugging
pet -- fun and play	hugs
pet -- gets me outside	humor
pet -- hanging out with my dog	increasing interaction
pet -- humor	increasing social interaction
pet -- petting the pet	information sharing
pet -- physical contact	in-person interaction
pet -- presence	insight
pet -- sense my moods and gives affection	joking around
pet - snuggles	keeping up spirits
pet -- unconditional love	kissing
pet presence -- pet is appreciating me	laughing
physical affection	letting others know I care
planning for future	listening
playing	listening (reading)
positivity	listening about medical situation
praying	listening regarding fears and concerns about death and illnesses
praying for me	listening regarding medical concerns
problem solving	listening to concerns
professional help	listening to concerns/fears about the pandemic
professional help (therapist)	listening to the same jokes over and over
professional help with bereavement	listening to their dealing with challenges
professional help with both self and special	listening to venting
professional help with isolation	love

providing information	maintaining contact
reassurance	make sure all her needs and worries are addressed
receiving communication	manage children going through difficult time
regular zoom tea party	moral support
remembering good times	motivating exercising
reminding they care about me	mutual advice
seeing how everyone is coping	mutual unspecified support
sharing	offer of support
sharing advice	offering advice
sharing concerns	offering advice when appropriate
sharing events of the day	offering encouragement
sharing experiences	offering help
sharing fears of the future	offering prayers
sharing feelings	online interaction
sharing frustration	phone calls
sharing how you're doing	phone calls of reassurance
sharing information	phone conversation about a family situation
sharing laughs and tears	Phone conversations supportive of change in lifestyle due to pandemic
sharing news	physical affection
sharing opinions	physical comfort
sharing our frustration [about] our leader	planning
sharing poetry	planning for possible sickness
sharing stories	planning future events
sharing what is going on	playing games on Zoom
social contact	positive comments
social contact (make me feel loved)	positive feedback
social contact (weekly skype calls)	positive thoughts
social media posts	praise
socializing	praying
somebody to talk to is important	processing feelings
someone listening to me	projecting positive attitude
spiritual contacts	promoting family connections
support from zoom support group	providing comfort
sympathizing	providing jokes
teaching online class	providing mutual support
thinking about the future	providing positive cards
understanding	raise hopes
unspecified support	reaching out
validation	reassured family that I am all right and will be okay so they will not worry

venting	reassured neighbors and friends that we can get through this and that we will be all right
video chatting with 12-step recovery program	reassuring
visiting	reassuring children about self
visiting for cocktails	regular conversation about others' self isolating
walking and talking	Reminding them I'm here and facing similar things (your feelings are justified and I share some of them...)
words of affection	reminiscing
	sending birthday cards
	sending cards
	sending emails
	sending flowers
	sending funny pictures
	sending messages
	sending positive emails
	sending positive messages
	sending supportive messages
	sending sympathy cards
	sent a funny video
	sharing
	sharing experiences
	sharing experiences such as music
	sharing in events of the day
	sharing laughs and tears
	sharing stories
	sharing stress
	sharing uncertainty
	sharing worries
	showing concern
	showing interest
	sharing concerns
	social media posts
	socializing
	speaking with my son who has a newborn and both are unemployed.
	spending quality time
	sympathizing
	talking about political concerns
	talking positive about this will soon pass
	talking through concerns
	teaching with positive, encouraging attitude



texting  
try to give my wife a smile  
trying to be encouraging  
trying to find the humor in our situations  
unspecified support  
validating feelings of vulnerability  
validation  
validation of fear  
venting  
verbal support (co-worker's parent was sick)  
video chatting  
video chatting for family gatherings  
video chatting for support group  
video chatting with a large family  
visiting  
visiting friend in assisted living facility  
walking while socially distancing  
witnessing emotion

---

**Table 2***Initial Consolidation of Open Codes for Received Emotional Support*

Level 1	Level 2	Level 3
caring	caring	caring and showing it
checking in	checking in receiving communication catching up	
visiting	visiting	
encouraging	encouraging	encouraging conversations encouraging information
listening	listening	listening to complaints listening to venting venting
nurturing actions and attitudes	sympathizing understanding validation reminding they care about me being supportive being understood reassurance comforting	
praying	praying	praying for me
spiritual	a spiritual reading spiritual contacts	
acknowledging	acknowledging appreciation	being appreciated
affection	affection	words of affection
	physical affection	hugging kisses

gifts?	gifts	encouraging scripture
	links to meditation podcast	
	book and movie recommendations	
positivity	positivity	
	birthday celebration	
	just being friendly	
	compliments	
	moral support	
pleasant presence/reliability?	being there for each other	
	companionship	
	friendship	
	hearing a friendly voice	
conversation	conversation	conversation (improved sense of self-worth)
		conversation about grief
social contact/communicating	social contact	social contact (make me feel loved)
		social contact (weekly skype calls)
	socializing	
	communicating	
mutual	sharing	sharing concerns
		sharing events of the day
		sharing experiences
		sharing fears of the future
		sharing feelings
		sharing frustration
		sharing how you're doing
		sharing laughs and tears
		sharing opinions
		sharing our frustration [about] our leader
		sharing poetry
		sharing stories
		sharing what is going on
		remembering good times
	mutual reassurance	
	mutual venting	

	commiserating	
discussing	discussing current situation	discussing current situation (staying at home) discussing ideas about staying safe
	discussing COVID future possibilities discussing future plans discussing news discussing worries and hopes comparing notes comparing situations	
walking and talking	walking and talking	
entertainment	entertainment exercise	biking together
	playing cooking via videochat	
helping processing	helping processing	helping processing feelings helping with feelings helping with reappraisal
	making the most of the situation	
information/advice	advice	getting advice
	problem solving insight sharing advice sharing news information	sharing information providing information
	learning how others are coping seeing how everyone is coping	
future-oriented	dreaming about future looking forward to seeing each other planning for future thinking about the future	

humor	humor	humor (partner)
availability	availability  perceived support is available offers of help	somebody to talk to is important someone listening to me
pet	pet -- being able to talk pet -- care providing structure pet -- caring for pet pet -- comfort pet -- companionship pet -- entertainment pet -- feels good from physical affection pet -- fun and play pet -- gets me outside pet -- hanging out with my dog pet -- humor pet -- petting the pet pet -- physical contact pet -- sense my moods and gives affection pet - snuggles pet -- unconditional love pet -- presence	pet presence -- pet is appreciating me
professional help	professional help	professional help (therapist) professional help with bereavement professional help with both self and special professional help with isolation appointment with therapist
ICT	celebration over zoom regular zoom tea party group-texting online workouts online yoga class social media posts	

support from zoom support  
group  
video chatting with 12-step  
recovery program

---

Unspecified Support

---

initiating/active role

initiating communication  
teaching online class  
being willing to receive  
encouragement

---

**Table 3***Initial Consolidation of Open Codes for Provided Emotional Support*

Level 1	Level 2	Level 3
acknowledging	acknowledging acknowledging presence	
assurance/reassurance	assuring that we will all get through these trying times reassured family that I am all right and will be okay so they will not worry  reassured neighbors and friends that we can get through this and that we will be all right	reassuring children about self
being supportive	being present being supportive being supportive of acute back pain being there being there for each other being understanding witnessing emotion	
caring	caring letting others know I care showing concern showing interest speaking with my son who has a newborn and both are unemployed. spending quality time asking questions make sure all her needs and worries are addressed promoting family connections	
checking in	checking in catching up on their situations checking in for well-being	
comforting	comforting comforting after loss comforting during medical situation re:COVID console physical comfort providing comfort	

empathy	empathy	empathize with anxiety and feelings of isolation
encouraging	encouraging	encouraging friends re:COVID encouraging them in their Christian faith and turn this situation into an opportunity for good
	cheering son on motivating exercising trying to be encouraging	
listening/allowing others to vent	listening	listening (reading) listening about medical situation listening regarding fears and concerns about death and illnesses listening regarding medical concerns listening to concerns listening to concerns/fears about the pandemic listening to the same jokes over and over listening to their dealing with challenges listening to venting
	careful listening	
moral support	moral support cheering people up keeping up spirits	
sending messages	sending messages	sending positive messages sending supportive messages
	sending cards	providing positive cards
	sending emails	sending positive emails
	sending sympathy cards	



sympathizing	sympathizing	
validation	validation	validating feelings of vulnerability validation of fear
	Reminding them I'm here and facing similar things (your feelings are justified and I share some of them...)	
visiting people in need	visiting	visiting friend in assisted living facility
praying	praying	
affection	affection physical affection	cuddling hugging kissing
	expressing affection goody box love sending flowers being a loyal and loving family member and friend friendship	
appreciation	appreciation with overwhelmed restaurant worker	
celebration	celebration birthday greetings to friends who would be celebrating home alone sending birthday cards	
companionship	companionship	
indirect positivity	having positive attitude positive thoughts projecting positive attitude teaching with positive, encouraging attitude	
positivity	positive comments positive feedback praise raise hopes	
	talking positive about this will soon pass	

---

communicating/  
interacting

communicating

connecting with others  
contact  
conversation

conversation about being safe  
conversation about daily living  
conversation about everyday things  
conversation about experiences with the virus  
conversation about friend's daughter in law breast cancer surgery  
conversation about neighbors' wife radiation treatments  
verbal support (co-worker's parent was sick)

daily communication  
exchanging routines  
increasing interaction  
increasing social interaction  
in-person interaction  
maintaining contact  
socializing  
walking while socially distancing  
media communication

texting  
online interaction  
phone calls  
social media posts  
video chatting

---

comparing situations  
discussion

comparing situations  
discussion

---

discussing COVID  
discussing current situations  
discussing effects of social distancing  
discussing family health  
discussing how "we" (city, state, etc.) can better come out of this

		discussing social distancing at work discussing stay at home issues discussing use of masks discussing virus discussing ways to make it through these times regular conversation about others' self isolating talking about political concerns
	exchanging thoughts	
sharing	sharing	sharing experiences sharing experiences such as music sharing in events of the day sharing laughs and tears sharing stories sharing stress sharing uncertainty sharing worries sharing concerns
	reminiscing	
sharing feelings	commiserating emotional exchange exchanging feelings mutual venting	
distraction	distraction	
entertainment?	playing games on Zoom	
helping processing	emotion processing processing feelings talking through concerns asking them what they think might be good solutions	
helping with feelings	help people coping with stress help people stay centered helping with depression, anxiety, and upset about the virus issues manage children going through difficult time	
informational	advice	advice for friends re:COVID

	advice on computer matters advice on cooking counselling insight mutual advice
	answering questions information sharing
planning	planning planning for possible sickness planning future events
humor	humor laughing joking around providing jokes sending funny pictures sent a funny video try to give my wife a smile trying to find the humor in our situations
availability	availability availability to listen availability to talk being available being available to listen
offer of support	offer of support offering advice offering advice when appropriate offering encouragement offering help offering prayers reaching out

**Table 4***Open Codes for Emotional Support*

Received instrumental	Provided instrumental
accompanying walks	advice
advice	advice about household challenges
advice about work, work advice	advice about medical care
advice on bike issues	answering questions
advice regarding house purchase	assistance with physical tasks
answered phone	car maintenance
answers to aviation questions	care for animals
banking	caregiving
board work for volunteer organization	childcare
borrowing knitting needles	cleaning
bringing in trash can	cleaning house
care for wife	clothing
caring for pets	clothing repair
carried a heavy package	community gardening
carrying, carrying things	construction
changes linen	cooking
checking in with delivery opportunities	delivering books
checking in with gardening	delivering plants
checking in with grocery shopping	driving
chores	entertainment
church book-keeping	errand
clean out litter box	exercise
cleaning	farm work
computer problems	financial advice
computer stuff	financial assistance
construction	financial task
cooking, meal preparation	fitness coaching
COVID test	flowers
daily chores	food
delivering necessities	gardening
delivery	gift
dental exam	gloves
dinner invitation	groceries
discussion	helping a local non-profit organization
dishwashing	helping with online schooling
dog walking	home repairs
driving	homeschooling
dropping off a cookbook	household chores

---

entertainment	information
errands, run errands	information
exchange baked goods	laundry
faucet repair	legal help
finding things in store	loaning a book
fixing sewing machine	loaning an instrument
fixing things around house	mask
food	mask delivery
baked a birthday cake	medical help
food delivery, delivering food	offer of ride
food, brings food	offered help
freshly caught fish	ordering supplies
gardening	organizing delivery
getting presents	organizing grocery delivery
given plant starts, sharing garden starts	paying for service
groceries	phone calls
groceries from joint freezer	physical task
guidance about work	repairs
help with getting out information	reviewing a document
help with supplies	search for supplies
help with treats	shopping
help with writing memos	supplies
home maintenance tasks	supply delivery
home projects	take on a work task for an overworked co-worker
home repairs, fix things around the house	taking out garbage
home tasks	teaching
house cleaning, cleaning house	technical help
household chores	unspecified help
housework	volunteering/work
information	witnessing legal procedures
irrigation system setup	work
jump-started car	work advice
keeping family informed and safe	yardwork
landscaping	
laundry	
legal advice	
lifting	
mailed a package	
many offers to help	
meals	
medical help	
medical information	

---

---

medical procedure  
medical service  
answers to medical questions  
adjusting medical device settings  
medical test  
medication checkup  
medication delivery  
medicine  
moving furniture  
moving things  
offer of a reusable mask  
offers to shop for groceries  
opening jars  
ordering a rose bush  
ordering supplies  
painting a room  
payment for services  
physical assistance in task  
physical therapy  
pick up mail  
picking up supplies  
picking up take-out  
planning  
planning shopping  
playing with pets  
prescription  
prompts walking  
rebuilding a shared fence  
received a mask  
received a tablet  
received cleaning supplies  
received masks  
received vitamins  
receiving baked goods  
recycling boxes  
remodeling a bathroom  
resolve pain  
reviewing exam results  
set up a picnic with family members  
set up computer  
sharing garden starts  
sharing resources  
sharing tips about stores

---

---

shopping  
signing advance directives  
signing checks  
structuring time  
supplies, providing supplies  
supply delivery  
taking out trash carts  
technical communication  
technical help  
technical help with computer  
technical help with phone, phone problems  
technical help with TV  
technical resources  
trapping animals  
unspecified help  
veterinary treatment  
volunteer tasks  
volunteer work  
washing  
work information  
work tasks  
yardwork

---



**Table 5***Initial Consolidation of Open Codes for Received Instrumental Support*

Level 1	Level 2
receiving advice/guidance	advice advice about work, work advice >> work advice advice on bike issues advice regarding house purchase guidance about work legal advice planning
ICT	computer problems computer stuff set up computer technical help technical help with computer technical help with phone, phone problems >> former technical help with TV technical communication
information	information sharing tips about stores work information answers to aviation questions discussion technical resources help with getting out information keeping family informed and safe
receiving caring for pets	caring for pets dog walking playing with pets clean out litter box
receiving physical assistance in task	physical assistance in task  carrying  opening jars lifting moving things
household chores	household chores, house chores chores daily chores home tasks >> household chores

	cleaning bringing in trash can home projects painting a room recycling boxes taking out trash carts
cooking	cooking, meal preparation >> cooking
errands, run errands	errands, run errands >> errands pick up mail picking up supplies picking up take-out planning shopping shopping mailed a package banking driving jump-started car
home repairs	home repairs, fix things around the house >> former faucet repair fixing sewing machine fixing things around house construction remodeling a bathroom
gardening/yardwork	gardening landscaping yardwork
housework	housework
delivery	delivery delivering food, food delivery >> food delivery delivering necessities medication delivery supply delivery ordering a rose bush
food	food, brings food >> food dinner invitation exchange baked goods baked a birthday cake freshly caught fish meals receiving baked goods groceries

	help with treats
receiving things	getting presents given plant starts, sharing garden starts >> former sharing resources  received a mask, received masks >> received mask received a tablet received cleaning supplies received masks received vitamins supplies borrowing knitting needles dropping off a cookbook
Medical	COVID test dental exam medical information medical procedure medical service answers to medical questions adjusting medical device settings medical test medication checkup physical therapy prescription reviewing exam results veterinary treatment medical help medicine care for wife resolve pain
legal procedures	signing advance directives
volunteer/work	volunteer tasks, volunteer work board work for volunteer organization church book-keeping payment for services signing checks work tasks help with writing memos
entertainment/exercise	entertainment set up a picnic with family members accompanying walks
help from pets	prompts walking

---

	structuring time
being reached out to	checking in with delivery opportunities checking in with gardening checking in with grocery shopping many offers to help offer of a reusable mask offers to shop for groceries
unspecified help	unspecified help answered phone

---

**Table 6***Initial Consolidation of Open Codes for Provided Instrumental Support*

Level 1	Level 2
advice/guidance	advice advice about household challenges advice about medical care answering questions financial advice teaching work advice information
Information and communication technology	technical help
legal procedures	legal help reviewing a document witnessing legal procedures
organizing	ordering supplies organizing delivery organizing grocery delivery
help to pets/care for animals	care for animals
providing physical assistance	assistance with physical tasks physical task
household chores	household chores cleaning cleaning house laundry clothing repair taking out garbage financial task
cooking	cooking
errands	errand car maintenance  phone calls repairs search for supplies shopping

	driving
home improvement	home repairs construction
gardening/yardwork/farm work	gardening community gardening Farm work yardwork
providing care	caregiving childcare helping with online schooling homeschooling
food	food groceries
providing things	clothing flowers mask gift gloves loaning a book loaning an instrument supplies delivering books delivering plants
financial support	financial assistance paying for service
medical	medical help
volunteer/work	volunteering/work fitness coaching helping a local non-profit organization take on a work task for an overworked co-worker work
reaching out	offered help offer of ride
entertainment/exercise	entertainment exercise
unspecified help	unspecified help

**Table 7***Code Descriptions*

Broader code	Description	Notes
<b>Instrumental Support</b>		
Information and advice	Providing or receiving information to/from other people to help them solve their problems -- we respect participants' decision whether it is instrumental or emotional	Includes IT help for home computer, etc. If in work/volunteer context, then code as work/volunteer.
Domestic tasks	Household tasks and errands, including grocery and other shopping, delivery, cleaning, cooking, etc.	
Gifts	Receiving or providing some sort of material goods, including food, books, masks, flowers, and financial assistance (not for work provided, but can include overpayments as gifts)	Can include groceries only if clearly specified as a gift;
Paid/professional transactions	Receiving personal services, formal support or quasi-formal support, including housekeepers, yard workers, medical professionals, therapists (paid for services), including paying people or getting paid for temporary or sporadic services, like Instacart	Use paying for services for provided support.
Work/volunteer colleagues	Any activity pertaining to help with work or volunteering from coworkers, employers, employees,	Include IT help at work; do not include paid transactions
Opportunities for diversion	Entertainment, exercise, instrumental support from pets, e.g., providing structure for caring for pets	
Offers of support	Offers of, not realized, support, e.g., open-ended offers of support, even if declined	
Caregiving	Receiving or providing caregiving, for example, looking after grandchildren or other relatives, including homeschooling, help with ADLS or IADLS if the person does not think they are able to perform them	
Unspecified support	Unspecified support -- when the type of support is unclear	

<b>EMOTIONAL SUPPORT</b>		
Interpersonal responses to distress	Support when the recipient is in distress, including any listening, validation, comforting, reassuring, caring, sympathy, including sympathy cards	nb: listening and talking coded under reciprocal
Promoting social ties through positive interactions	Pleasant interactions, where the recipient is not in clear distress, including affection, celebration, hugs, positivity, including checking in, maintaining contact, playing, diversion, joking around, etc.	Includes contact when content is unclear, e.g., phone calls, talking
Reciprocal support	When the support is more reciprocal, such as sharing feelings, includes exchanges, commiseration, discussing, talking & listening, conversations	
Helping to cope	When the support is specific to coping behaviors, including emotional processing, distraction, problem solving, and humor when specific to diffusing emotions	Include advice only if clearly under distress
Information/advice	Any emotional support pertaining to information and advice -- we respect participants' decision whether it is instrumental or emotional	
Perceived availability of/to support	Perceived availability or offer of support	
Media communication	Any communication via media, such as social media, email, or zoom, including web support groups	
Religious/spiritual support	Support through religiousness/spirituality, e.g. praying	
Pets	Only pertains to received emotional support: emotional support from pets	
Professional help	Only pertains to received emotional support: help from professionals, e.g., therapists	
Unspecified support	Unspecified support -- when the type of support is unclear	