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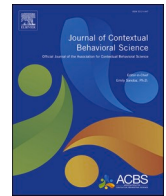
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The role of thought suppression and psychological inflexibility in older family caregivers' psychological symptoms and quality of life

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ABSTRACT

Background: Family caregivers often report high levels of distress, including depressive symptoms, anxiety, and reduced quality of life. There is a need for a greater understanding of the factors influencing, explaining, and maintaining psychological distress in family caregivers.

Aim: The aim of this study was to examine whether avoidance strategies such as thought suppression (WBSI), psychological inflexibility (AAQ-II), and caregiver experiential avoidance (EACQ) predict psychological distress (BDI-II, GAD-7) and quality of life (WHOQOL) in family caregivers aged 60 and over. We hypothesized that these avoidance strategies would explain elevated levels of psychological symptoms and lower quality of life.

Method: Altogether, 149 family caregivers completed self-report measures of depressive symptoms, anxiety, quality of life, thought suppression, psychological inflexibility and caregiver experiential avoidance. We conducted correlation and regression analyses to assess the associations and the predictive ability of these constructs.

Results: Together, psychological inflexibility and thought suppression accounted for between 40 and 46% of the variance in the depression and anxiety outcomes and 15% of the variance in the physical domain of quality of life. Unwanted thoughts, the subcomponent of thought suppression, was strongly associated with symptoms of depression and anxiety, and with physical and psychological quality of life.

Conclusion: Thought suppression and psychological inflexibility played a significant role in explaining family caregivers' symptoms of depression and anxiety. In addition, psychological inflexibility was significantly related to quality of life. This suggests the need for acceptance-based strategies to handle thought suppression and psychological inflexibility.

1. Introduction

Family caregivers play an essential role in providing care and assistance to their dependent elderly family members, including daily activities and medical support (Reinhard et al., 2012; Roth et al., 2015). Caring for a relative with dementia or other long-term conditions requires time as well as mental and physical resources, which can be burdening. Research shows that family caregivers often report high levels of distress, including depressive symptoms, anxiety, stress, and reduced quality of life (Jansen et al., 2015). It is estimated that the prevalence of depression and anxiety in family caregivers of people with dementia is approximately 31–32% (Collins & Kishita, 2019; Kaddour &

Kishita, 2020) which is significantly higher than the equivalent rates in the general population and in caregivers of people with other conditions. In particular spousal caregivers of older adults experience a higher burden and report more often mental health problems compared to adult-child caregivers (Oldenkamp et al., 2016). While the association between psychological distress and caregiving is well supported, there is still limited knowledge of the psychological factors predicting distress. Thus, there is a need for a close examination and greater understanding of the factors influencing, explaining, and possibly maintaining psychological distress in family caregivers.

Considerable research has been devoted to psychological inflexibility and its role in explaining psychological distress among a wide range of

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populations, ages and disorders (e.g., Andrew & Dulin, 2007; A-Tjak et al., 2015; Ayers et al., 2010; Bluett et al., 2014; Han et al., 2020; Hayes et al., 2006; Levin et al., 2014), suggesting that high levels of psychological inflexibility are strongly associated with higher levels of depressive and anxiety symptoms and lower quality of life. Psychological inflexibility, the opposite of psychological flexibility, is a process in which an individual's behavior is rigidly dominated by psychological reactions rather than direct contingencies or personal values (Levin et al., 2014). In caregiving context, Spira et al. (2007) investigated the role of psychological inflexibility as measured by the Acceptance and Action Questionnaire (AAQ-II; Bond et al., 2011) in female caregivers of older adults with dementia and found that psychological inflexibility was significantly associated with an increased number of depressive symptoms. Equally, Romero-Moreno et al. (2016) demonstrated that psychological inflexibility as assessed by the Acceptance and Action Questionnaire (AAQ-II) was significantly correlated with higher levels of depression and anxiety, and that, experiential avoidance, rumination, and satisfaction with leisure significantly mediated the association between stressors and anxiety among family caregivers of people with dementia. Further, the findings of Kishita et al. (2020) suggested that psychological inflexibility as measured by AAQ-II was the only significant predictor of anxiety in family caregivers of people with dementia. These studies, using the AAQ-II, a generic measure of psychological inflexibility, suggest that psychological inflexibility plays an important role in caregiver distress.

Experiential avoidance (EA) is considered a component of psychological inflexibility (Losada et al., 2014), and involves the unwillingness to remain in contact with private experiences, such as painful thoughts and feelings, i.e., attempts at avoiding them (Chawla & Ostafin, 2007). In the context of caregiving, EA occurs when the caregiver is not willing to remain in contact with the negative experiences associated with the care and tries to avoid or escape from them (Márquez-González et al., 2010, 2018). There is some evidence to suggest that these strategies are associated with psychological distress among caregivers. Jansen et al. (2015) found a significant association between dysfunctional meta-cognitions (i.e., worry and rumination) and distress among caregivers of persons with first-episode psychosis. García-Alberca et al. (2012) found evidence of very high rates of depression and anxiety in caregivers of Alzheimer's disease patients who used avoidant coping strategies. Márquez-González et al. (2018) showed a significant association between EA in caregiving and elevated blood pressure, in particular, that the subscales of avoidant behaviors and intolerance of negativity were associated with systolic and diastolic blood pressure. There are also indications that EA may negatively affect the immune system (Lane & Wegner, 1995; Petrie et al., 1998). In sum, research suggests that EA is often futile and may cause serious consequences for health and well-being.

One form of experiential avoidance is thought suppression — a general tendency to suppress distressing thoughts, and studies suggest that engaging in thought suppression is counterproductive and futile (e.g., Clark et al., 1991; Lavy & Van den Hout, 1990; Rassin et al., 1997; Wegner & Zanakos, 1994). Avoidance of unwanted thoughts and feelings may seem like a beneficial coping strategy in the short term for decreasing distress, but in the long run, it may increase the presence of suppressed thoughts and distress (Lane & Wegner, 1995; Losada et al., 2014; Wegner & Zanakos, 1994). Suppression of unpleasant thoughts often results in a “rebound effect”, whereby the suppressed thought may be experienced more frequently (Abramowitz et al., 2001). Research suggests that thought suppression may contribute to rumination (Davis & Nolen-Hoeksema, 2000), and negative thoughts are seen as the causes of unhappiness among individuals with depression who also report that they try to cope with persistent thoughts by trying to suppress them (Wenzlaff, 1993). Compared to men, women are considered to engage more frequently in thought suppression (Rassin, 2003). Evidence related to thought suppression and its ability to enhance the recurrence of intrusive thoughts is mixed. The meta-analysis of Magee et al. (2012)

found no differences in the recurrence of thoughts due to thought suppression between psychopathology and non-clinical groups. On the other hand, several studies have found strong, positive correlations between depression and chronic thought suppression (e.g., Spinhoven & van der Does, 1999; Wegner & Zanakos, 1994; Wenzlaff et al., 2002), showing that chronic thought suppression and the development of depressive symptoms are associated (Rude et al., 2002; Wenzlaff & Bates, 1998). Studies suggest also that the association is temporal, with suppression preceding depression, and contributing to negative thoughts that cause depressive mood (Wenzlaff & Luxton, 2003). Preliminary support for this is provided by Judd (1997) in a study where formerly depressed individuals who did not show any signs of depressive symptoms, reported high levels of chronic thought suppression prior to relapse to depressive episode, suggesting that elevated levels of thoughts suppression might predict psychological symptoms.

The number of studies that have investigated the role of thought suppression among family caregivers are scarce. Wilson et al. (2019) found that unwanted thoughts about caregiving and avoidance of these thoughts may increase symptoms of depression, pain and sleep disturbances. In older adults, chronic thought suppression has been associated with elevated levels of depression and anxiety (Lynch et al., 2004; Petkus et al., 2012), increased risk of suicide (Cukrowicz et al., 2008), and a lower sense of meaning (Krause, 2007). In addition, Petkus et al. (2012) found that thought suppression was not only associated with higher probability of somatic, depressive and anxiety symptoms, but engaging in thought suppression was also linked to being more likely to meet criteria for any psychiatric disorder, such as depressive disorder, suggesting that more research is needed to investigate whether thought suppression could serve as maintenance factors in emotional disorders. According to Petkus et al. (2012), thought suppression may be element of a broader usage of both cognitive and behavioral avoidance strategies and it can be “automatically” reinforced because avoidance strategies often are associated with decreased distress immediately after applying them. There are also indications that thought suppression and life stress interact, suggesting that suppression under conditions of high stress may predict higher rates of depression (Beevers & Meyer, 2004). This finding is in line with Wenzlaff and Luxton (2003) who suggest that depressive rumination increases when both life stress and suppression levels are high. Therefore, family caregivers who often experience high rates of life stress might be vulnerable to rumination and depression. Research has also found age-related differences in the difficulty controlling intrusive thoughts and the distress associated with the recurrence of the thought, suggesting that older adults experience greater difficulty with controlling the unwanted thought and report increased negative feelings after engaging with the thought than younger adults (Magee & Teachman, 2012). In addition, studies suggest that the instrument White Bear Suppression Inventory (WBSI) in fact does not measure suppression, but rather failing suppression attempts, and addresses the experience of intrusive thoughts (Rassin, 2003). In that sense this scale does not only measure an avoidant coping strategy, but also the *reason* for suppression attempts (e.g., experiencing unwanted thoughts) (Rassin, 2003).

In order to better understand distress and the specific mechanisms of avoidance among older family caregivers, the role of experiential avoidance and in particular thought suppression need to be investigated more thoroughly. The aim of the current study was to examine whether thought suppression, psychological inflexibility and caregiver experiential avoidance were associated with symptoms of depression and anxiety, and quality of life in family caregivers aged 60 and over. In particular, we were interested in examining thought suppression and the subcomponents of suppression in explaining symptoms of depression, anxiety and quality of life. We hypothesized that thought suppression, psychological inflexibility and caregiver experiential avoidance would be associated with increased symptoms of depression and anxiety, and lower levels of quality of life. The results of this study will potentially reveal whether avoidance strategies such as thought suppression, and psychological inflexibility play an important role in psychological

distress and quality of life in family caregivers. Such results will have important clinical implications for the treatment of emotional disorders in older family caregivers.

2. Methods

2.1. Participants

The data were drawn from the pre-measurements of a quasi-experimental intervention study that compared three groups of interventions involving family caregivers aged 60 and over (Group 1, $n = 59$: a guided 12-week web-based intervention; Group 2, $n = 52$: a standardized institutional rehabilitation program in a rehabilitation center; Group 3, $n = 38$: support from voluntary caregiver associations). In the current cross-sectional study, we have investigated the whole sample of participants ($n = 149$) without differentiating the groups. The age limit of 60 years was chosen as we wanted to include also family caregivers between 60 and 65 years who may still be in working life and struggle to balance caregiving and work obligations, and, therefore, experience high caregiving burden. In this study, the sample is called *older* caregivers to distinct this group from caregivers of children who, in general, are younger.

Due to the large number of questionnaires in the original study (see Lappalainen et al., 2019 <https://bmccgeriatr.biomedcentral.com/articles/10.1186/s12877-019-1071-9>), only symptom measures, such as depression (BDI-II) and anxiety (GAD-7), and quality of life (WHO-QOL-BREF), with its four domains—physical, psychological, social and environment—were selected for closer examination. Caregivers' depressive symptoms as a primary outcome and anxiety, quality of life, thought suppression, psychological inflexibility, caregiver experiential avoidance, all secondary outcomes, were measured using validated self-report questionnaires. Data from the family caregivers who completed the self-report questionnaires at the pre-intervention phase were included in the study. The participants were recruited through a newspaper advertisement (Group 1), rehabilitation centers via email (Group 2), and caregiver associations via email (Group 3). To be eligible, caregivers had to be 1) at least 60 years of age, have 2) perceived depressive symptoms and/or psychological distress, which was verified with a screening instrument (Group 1) measuring distress and depressive symptoms (DEPS; Salokangas et al., 1995), verified during a medical doctor's examination (Group 2), or self-reported (Group 3).

Additionally, for Group 1, there was a requirement to be able to use a computer with Internet connection. The exclusion criteria for all groups included 1) diagnosed with severe mental disorder and 2) parallel psychological treatment. A total of 163 caregivers enrolled in the study. The pre-measurement questionnaires were either completed on the spot and handed to the coach (Group 1) or handed over by the researcher and returned by prepaid envelope (Groups 2 and 3). Of these, 10 did not meet the inclusion criteria, two dropped out before the pre-measurement, and two did not return the pre-measurement questionnaires and were excluded from the study ($n = 14$). Thus, the study population comprised 149 family caregivers. They were mainly women (81%) with a mean age of 72.9 years ($SD = 6.1$, range 60–88). The majority of them had at least nine years of education (69%), and most of them were spousal caregivers (90%), with the mean age of the care recipient being 75.9 ($SD = 11.4$). A majority of the family caregivers reported having a disease or diagnoses of their own (83%). Between January and December 2017, pre-measurements were carried out in eight Finnish cities and municipalities for all three groups. Sample characteristics are shown in Table 1.

The study was approved by the Ethical Committee of the Central Finland Health Care District (board affiliation: Central Finland Central Hospital; approval number 3E/2016 on November 24, 2016; and registered with www.clinicaltrials.gov (ClinicalTrials.gov Identifier: NCT03391596 on January 4, 2018). All participants voluntarily took part in the study and gave written informed consent for their

Table 1
Characteristics of family caregivers.

Caregiver variables	N = 149
Age [Mean (SD)]	72.9 (6.1), range 59–88
Sex	
Female	120 (80.5%)
Male	29 (19.5%)
Marital status^b	
Married or living together	135 (90.6%)
Unmarried	3 (2%)
Divorced	4 (2.7%)
Education^a	
Low	40 (26.8%)
Middle	71 (47.7%)
High	31 (20.8%)
Caregiver has a disease or diagnosis^b	125 (83.9%)
On regular medication^b	129 (86.6%)
Care recipient	
Spouse	134 (89.9%)
Father or mother	6 (4%)
Other family member	4 (2.6%)
Child	5 (3.4%)
Age of care recipient [Mean, (SD)]	75.9 (11.4), range 25–96
No. Of years providing care^c	
<1 year	6 (4%)
1–2 years	14 (9.4%)
2–5 years	42 (28.2%)
>5 years	76 (51%)

*** missing information, $n = 140$.

**** missing information, $n = 135$.

^a Low > 9 years; Middle 9–12 years, High > 12 (university, college, etc.).

^b Missing information, $n = 142$.

^c Missing information, $n = 131$.

participation before the start of the pre-measurements.

2.2. Measurements

2.2.1. Symptom measures

2.2.1.1. Depression. The Beck Depression Inventory (BDI-II; Beck et al., 1996) is commonly used in research and clinical practice to measure the presence and severity of depression. It contains 21 questions on depressive symptoms and their severity. The items are evaluated on a 0–3 scale according to the symptoms experienced in the previous two weeks. The scoring ranges from 0 to 63 (0–13 indicates no or very few depressive symptoms; 14 to 19 mild depression; 20 to 28 moderate depression; and 29 to 63 severe depression). The reliability and validity of the BDI-II have been found to be good among older and younger adults. The BDI-II has shown strong psychometric support as a screening instrument for depression among older adults in the general population. (Segal et al., 2008). Cronbach's α for the BDI-II in this study was 0.88.

2.2.1.2. Anxiety. The Generalized Anxiety Disorder 7-item scale (GAD-7; Spitzer et al., 2006) is a self-report questionnaire for assessing generalized anxiety disorder. It comprises seven items measuring the severity of various signs of GAD. The response categories are scored from 0 (not at all) to 3 (nearly every day). A sum score (min 0, max 21) is then calculated, with scores of less than four representing minimal, 5–9 mild, 10–14 moderate, and scores of 15 or more indicate severe anxiety. Higher GAD-7 scores correlate with disability and functional impairment. The GAD-7 has good reliability and validity (Spitzer et al., 2006), and its validity among older population has also been established (Wild et al., 2014). Cronbach's α for the GAD-7 in this study was 0.86.

2.2.1.3. Quality of life. The WHO Quality of Life-BREF (WHOQOL-

BREF) is an abbreviated 26-item version of the WHOQOL-100 assessment (Skevington et al., 2004). It produces a quality of life profile derived from four domain scores: physical health, psychological health, social relationships, and environment. The WHOQOL-BREF contains 26 questions, scored from 1 to 5 (1 = not at all or very poor; 5 = completely, very good, or very satisfied). Each domain is scored separately. Separate scores are also given for two of the 26 items: self-perceived overall quality of life (question 1) and health (question 2). Higher domain scores indicate a higher quality of life. To render the domain scores comparable with the scores used in the WHOQOL-100, they are each multiplied by 4 (Skevington & McCrate, 2012). The WHOQOL-BREF shows good to excellent psychometric properties (Skevington et al., 2004). In this sample, Cronbach's α was 0.87.

3. Process measures

3.1. Thought suppression

The White Bear Suppression Inventory (WBSI; Wegner & Zanakos, 1994) is a 15-item questionnaire designed to measure thought suppression. Chronic thought suppression is related to obsessive thinking and negative affect associated with depression and anxiety. The WBSI is rated on a 5-point scale from strongly disagree (1) to strongly agree (5). Total scores range from 15 to 75, with higher scores indicating greater tendencies to suppress thoughts. In addition, three correlated factors: Unwanted intrusive thoughts (e.g., *I have thoughts that I cannot stop*; items 2, 3, 4, 5, 6, 7, 9, 15), Thought suppression (e.g., *I often have thoughts that I try to avoid*; items 1, 8, 11, 14), and Self-distraction to avoid thoughts (e.g., *I often do things to distract myself from my thoughts*; items 10, 12, 13) can be detected (Blumberg, 2000). Studies show that the WBSI is a reliable and valid self-report instrument (Muris et al., 1996). Cronbach's α in this sample was .92.

3.2. Psychological inflexibility

The Acceptance and Action Questionnaire (AAQ-II; Bond et al., 2011) is a shorter version of the AAQ-16 and AAQ-10 versions and assesses psychological flexibility. It comprises seven items to be answered on a scale of 1 (never true) to 7 (always true) on the person's willingness to be in contact with negative private events, acceptance of these events, and whether they can live in accordance with their values. The questions on the AAQ-II are based on statements such as "My painful experiences and memories make it difficult for me to live a life that I would value." A summation of the scores results in a total mark ranging from 7 to 49, with higher scores indicating higher levels of EA (i.e., lower levels of psychological flexibility). The scale indicates satisfactory psychometric properties (Bond et al., 2011). Cronbach's α in this study was 0.91.

3.3. Experiential avoidance in caregiving

EA was assessed using the Experiential Avoidance in Caregiving Questionnaire (EACQ; Losada et al., 2014). The questionnaire comprises 15 items, each rated from 1 (not at all) to 5 (a lot). Factor 1 (Active Avoidant Behaviors) contains six items that measure caregivers' behaviors regarding the avoidance of negative thoughts related to caregiving (min 5, max 25). Factor 2 (Intolerance of Negative Thoughts and Emotions Towards the Relative) contains four items with content related to rigid verbal thinking about having negative emotions/thoughts about the care recipient (min 4, max 20). Factor 3 (Apprehension Concerning Negative Internal Experiences Related to Caregiving) comprises five items on reluctant attitudes toward negative thoughts about the care recipient (min 5, max 25). Sum scores are calculated for the three subscales, with higher scores indicating more avoidance, e.g., the worst outcome. The EACQ has showed acceptable psychometric properties (Losada et al., 2014). The Finnish version of the scale was based on the study by Losada et al. (2014), and the translation was done by the ACT

research team. However, the validity and reliability of the scale was not tested other than Cronbach's alpha being in this sample acceptable ($\alpha = 0.76$).

3.4. Statistical analyses

Descriptive statistics for all the variables were conducted using SPSS (version 24). The associations between the process measures (thought suppression, psychological inflexibility, experiential avoidance) and measures of psychological symptoms and quality of life were analyzed using Pearson's correlation coefficients. Correlations of $r < 0.30$ were considered small, $r \geq 0.30$ – 0.49 medium or moderate, and $r \geq 0.50$ were considered strong (Kraemer et al., 2003). Next, the observed associations were further explored using multiple linear regression analysis to assess the extent to which the process measures of psychological flexibility (AAQ-II) and thought suppression (WBSI) explained the variance in depression (BDI-II) and anxiety (GAD-7), and in the four domains of quality of life (WHOQOL -BREF physical, psychological, social, and environmental). Only process variables showing at least medium size correlations ($r \geq 0.30$) were included in the regression models, leaving out EACQ when completing the regression models (see results). Several multiple linear regression models were used to predict the depression, anxiety, and quality of life subscales, with psychological flexibility and thought suppression serving as predictor variables for each measure. Also, the assumptions for completing the multiple regression models were investigated. The variance inflation factors (VIF) were in acceptable range (VIF = 1.414–1.443). The visual examination showed that the residuals were normally distributed, and the data met assumptions of linearity and homoscedasticity of the residuals. We did not perform regression analyses with WBSI subscales as predictors as the subscales correlated very highly with each other ($r > 0.80$), and, therefore, the results would have been unreliable.

4. Results

4.1. Severity of symptoms

On the BDI-II, more than half of the family caregivers (55%, $n = 82$) were identified as experiencing no or minimal symptoms (≤ 13), whereas approximately 40% reported at least mild depression: 21% ($n = 31$) mild depression, 17% ($n = 25$) moderate symptoms, and, finally, severe symptoms of depression were reported by two (1%) of the family caregivers. Information from nine (6%) of the participants were missing. Regarding anxiety as measured by the GAD-7, nearly half of the caregivers ($n = 69$, 46%) reported minimal symptoms of anxiety (≤ 4), and 34% ($n = 51$) were classified as having mild symptoms. Fifteen family caregivers (10%) experienced moderately severe anxiety. However, no family caregivers reported severe symptoms of anxiety (≥ 15). Information from 14 participants was missing.

4.2. Relationships between psychological processes and symptoms and quality of life

Mean values for each of the outcome measures at baseline and Pearson's correlations are reported in Table 2. The EACQ, including the subscales, was omitted from the correlation table (Table 2) because all the correlations between the EACQ and the psychological symptoms of depression and anxiety and quality of life (WHOQOL-BREF with subscales) were small ($r < 0.30$), ranging from 0.02 to 0.29. However, both the correlations between EACQ total and BDI-II, and between EACQ total and GAD-7 were significant ($p < .01$) and close to medium level ($r = 0.29$). Also, Factor 2 (Intolerance of Negative Thoughts and Emotions Towards the Relative) correlated significantly with both BDI-II and GAD-7, and the correlations were also close to medium level ($r = 0.28$ and 0.29, respectively). Thus, more avoidance was associated with increased number of symptoms.

Table 2

Pearson correlation values for association between depression (BDI-II), anxiety (GAD-7), quality of life (WHOQOL), psychological inflexibility (AAQ-II) and thought suppression (WBSI) with subscales in family caregivers aged 60 and over.

Measure	BDI-II	GAD-7	WHOQOL Physical	WHOQOL Psychol.	WHOQOL Social	WHOQOL Environment	WBSI	WBSI Suppression	WBSI Unwanted thoughts	WBSI Self-distraction	AAQ-II
1) BDI-II	1	.69**	-.31**	-.70**	-.51**	-.31**	.51**	.37**	.52**	.40**	.61**
2) GAD-7	.69**	1	-.36**	-.54**	-.40**	-.33**	.59**	.43**	.61**	.42**	.62**
3) WHOQOL Physical	-.31**	-.36**	1	.42**	.20*	.50**	-.36**	-.24	-.33**	-.32**	-.34**
4) WHOQOL Psychological	-.70**	-.54**	.42**	1	.60**	.44**	-.32**	-.19*	-.32**	-.26**	-.48**
5) WHOQOL Social	-.51**	-.40**	.20*	.60**	1	.39**	-.25**	-.17	-.26	-.12	-.40**
6) WHOQOL Environment	-.31**	-.33**	.50**	.44**	.39**	1	-.24**	-.11	-.24	-.18*	-.30**
7) WBSI	.51**	.59**	-.36**	-.32**	-.25**	-.24**	1	.86**	.94**	.86**	.55**
8) WBSI Suppression	.39**	.43**	-.24**	-.19*	-.17*	-.11	.86**	1	.72**	.80**	.39**
9) WBSI Unwanted thoughts	.52**	.61**	-.33*	-.32**	-.26**	-.24**	.94**	.72**	1	.70**	.57**
10) WBSI Selfdistraction	.40**	.42**	-.32**	-.26**	-.12	-.18*	.86**	.80**	.70**	1	.42**
8) AAQ-2	.61**	.62**	-.34**	-.48**	-.40**	-.30**	.55**	.39**	.57**	.42**	1
Mean (SD)	12.70 (7.07)	5.36 (4.06)	61.92 (14.82) n	58.21 (15.25) n	54.65 (17.92) n	67.07 (13.81) n = 146	44.66 (12.19) n = 140	13.02 (3.24) n = 140	22.59 (6.97) n = 140	9.35 (2.99) n = 140	18.10 (8.41) n = 140

Note: ***p* < .01, **p* < .05.

Pearson’s correlation analysis showed that psychological inflexibility (AAQ-II) and thought suppression (WBSI) were both significantly and strongly (*r* > 0.50) associated with symptoms of depression (BDI-II) and anxiety (GAD-7), indicating that elevated levels of depression and anxiety symptoms were associated with higher levels of psychological inflexibility and thought suppression. High levels of psychological inflexibility (AAQ-2) were moderately (*r* = 0.30–0.48) associated with low levels of all the quality of life subscales (WHOQOL-BREF physical, psychological, social and environment). Thought suppression (WBSI) was moderately associated with the physical and psychological domains of quality of life (*r* = 0.32–0.36). The correlations between WBSI and social and environmental quality of life were small (*r* = - 0.24 and 0.25, respectively). Partial correlations were also calculated for all the measures, with the length of time serving as a caregiver used as a covariate in the correlation models. Introducing the length of time serving as a caregiver as a covariate did not affect the interpretation of the observed associations.

We investigated separately the WBSI subdimensions and observed that the subdimension Unwanted thoughts correlated highly with the symptoms of depression and anxiety (*r* > 0.50). Thus, the more unwanted thoughts were reported, the higher number of symptoms were experienced. Unwanted thoughts correlated moderately (*r* = 0.32–0.33) with physical and psychological quality of life. The subdimension Self-

distraction correlated moderately with BDI-II and GAD-7 (*r* = 0.40–0.42), and physical quality of life (*r* = -0.32), and the sub-dimension Suppression moderately with BDI-II and GAD-7 (*r* = 0.39–0.43). All other correlations were small (Table 2).

4.3. Predicting symptoms and quality of life

Multiple linear regression models (Table 3) were conducted to predict symptomatology and quality of life (dependent variables: BDI-II, GAD-7; WHOQOL-BREF) using psychological inflexibility (AAQ-II) and thought suppression (WBSI) as predictor variables. Together, psychological inflexibility and thought suppression explained 40% of the variance in the severity of the symptoms of depression. The AAQ-II contributed more than the WBSI (standardized Beta 0.473 vs. 0.247). Together, the AAQ-II and WBSI explained 46% of the variance in the severity of anxiety symptoms among elderly caregivers, and similarly, the AAQ-II contributed more than the WBSI. For the quality of life subscales, a combination of the AAQ-II and WBSI accounted for a significant proportion of the variance in physical quality of life, explaining 15% of the total variance. Both variables contributed equally to the model. When explaining the variance in quality of life related to psychological, social, and environmental factors, only psychological flexibility was a significant predictor variable. The variance in psychological

Table 3

Multiple linear regression models to predict depression, anxiety and quality of life in elderly family caregivers.

Predicted variables	Predictor variables	R ²	Adjusted R ²	F	Df	Sig.	Standardized coefficients Beta		
							Beta	t	Sig. Beta
BDI-II	AAQ-2	.411	.402	46.68	2, 134	<.001	.473	5.99	<.001
	WBSI						.247	3.13	.002
GAD-7	AAQ-2 WBSI	.470	.462	59.32	2, 134	<.001	.439	5.81	<.001
							.337	4.46	<.001
WHOQOL Physical	AAQ-2 WBSI	.157	.145	12.52	2, 134	<.001	-.208	-2.20	.029
							-.244	-2.58	.011
WHOQOL Psychological	AAQ-2 WBSI	.235	.224	20.60	2, 134	<.001	-.424	-4.71	<.001
							-.100	-1.11	.269
WHOQOL Social	AAQ-2 WBSI	.159	.147	12.68	2, 134	<.001	-.375	-3.98	<.001
							-.041	-0.44	.663
WHOQOL Environment	AAQ-2 WBSI	.100	.086	7.43	2, 134	.001	-.240	-2.46	.015
							-.113	-1.16	.248

inflexibility accounted for 22% of the total variance in the psychological domain of quality of life, 15% of the total variance in social quality of life, and nine percent in environmental quality of life.

5. Discussion

The aim of the current study was to examine the associations between thought suppression, psychological inflexibility, caregiver experiential avoidance and depressive symptoms and quality of life in elderly family caregivers at baseline. We hypothesized that higher levels of thought suppression (WBSI), psychological inflexibility (AAQ-II) and caregiver experiential avoidance (EACQ) would be associated with increased caregiver distress, such as symptoms of depression and anxiety and the different aspects of quality of life (WHOQOL-BREF physical, psychological, social, and environment). In particular, we were interested to examine the role of thought suppression as avoidance strategy of family caregivers. Consistent with our hypothesis, higher levels of thought suppression and psychological inflexibility were strongly associated with symptoms of depression and anxiety, and together, they explained over 40% of depression and anxiety symptoms among older caregivers. Further, we observed that the contribution of general psychological inflexibility (AAQ-II) was stronger than that of suppression (WBSI). Also, in accordance with our hypothesis, we detected that general psychological inflexibility and thought suppression explained 15% of the level of quality of life connected to the physical area. Upon observing the other domains of quality of life, psychological, social, and environmental, only psychological inflexibility explained between nine and 22% of the total variance.

Regarding thought suppression, our findings are also in line with earlier research suggesting that engaging in thought suppression was associated with depressive symptoms in older adults (Petkus et al., 2012), suggesting that avoidance behaviors, such as the suppression of unwanted thoughts, are critical factors in psychological distress (Kashdan et al., 2006) and may contribute to increased rumination and the development of depression and anxiety in older caregivers and adults in general (Petkus, 2012). Petkus and colleagues have suggested (2012) that thought suppression may contribute to the development of depression and anxiety in older adults as much as physical health and functional impairments which has important implications for the treatment and support offered for family caregivers. As in particular women are more prone to rumination, as result of increased thought suppression (Butler & Nolen-Hoeksema, 1994; Nolen-Hoeksema, 1993), special attention should be given to female family caregivers. As studies suggest that life stress and high tendency to suppress thoughts are a combination that may cause excessive rumination and lead to depression (Wentzlaff & Luxton, 2003), in particular female family caregivers living under constant stress and high levels of strain are particularly vulnerable and at risk for developing depression. Female caregivers are also considered to be less likely to engage in preventive health behaviors and, therefore, neglect their own health (Schulz, 1997). Health professionals should teach family caregivers constructive ways to handle unwanted thoughts and emotions that inevitably occur in life and, in particular, in challenging caregiving situations. If high levels thought suppression precede depression (see the study by Judd, 1997), it is important to identify this avoidance strategy and take necessary actions to prevent the onset of depression. In addition, attention should also be given to older adults in caregiver role because care demands and stress associated with caregiving may have a negative impact on their health and exacerbate their chronic health conditions (Navaie-Waliser et al., 2002).

Regarding the subcomponents of thought suppression among older family caregivers, unwanted thoughts were strongly associated with symptoms of depression and anxiety as well as with physical and psychological quality of life. Also, the dimensions suppression and distraction were moderately associated with depression and anxiety. These findings suggest that family caregivers with higher levels of

depressive and anxiety symptoms experience high amounts of unwanted thoughts, i.e., fail in their attempts to suppress these intrusive thoughts (Rassin, 2003). Caregivers are exposed to chronic stress (Schulz & Sherwood, 2008), which makes them more vulnerable to the adverse consequences of thought suppression. As research suggest that high levels of thought suppression are associated with higher life stress and higher depression (Beevers & Meyer, 2004), thought suppression attempts among caregivers who experience chronic stress often fail and this may lead to higher levels of rumination and depression. Thus, as high stress load in caregiving hardly can be prevented, the way family caregivers learn to handle these thoughts seems to play an important role in relation to low mood and anxiety.

With regard to psychological inflexibility, our findings are consistent with earlier research on diverse groups of caregivers wherein psychological inflexibility, as measured by the AAQ-II, was highly and significantly associated with elevated symptoms of depression (Spira et al., 2007) and caregiver distress (Jansen et al., 2017). This has also been shown in other studies with older adults (e.g., Andrew & Dulin, 2007). As our sample suggested, both psychological inflexibility and thought suppression explained symptoms and depression and anxiety, whereas inflexibility alone was the predictor of psychological, social, and environmental quality of life. One possible explanation for this might be that the AAQ-II is a more generic measure of psychological inflexibility, which focuses on the effects of thoughts and feelings on value-related behaviors in a broader context (Sairanen et al., 2018), whereas thought suppression more specifically assesses the ways in which we deal with our inner experiences, in particular unwanted thoughts and emotions.

The caregiver experiential avoidance (EACQ) showed relatively low ($r < 0.30$) correlations between the symptom and quality of life measures. This is in accordance with the data reported by Losada et al. (2014) who reported low correlations between symptoms of depression and anxiety, and EACQ (depression: $r = 0.03$ – 0.13 ; anxiety: $r = 0.03$ – 0.18). The equivalent correlations in the current study were for depression $r = 0.19$ – 0.29 , and for anxiety $r = 0.14$ – 0.29 , indicating somewhat stronger correlations. Similarly, Losada et al. (2014) reported that the correlations between the EACQ (total and the three factors), and AAQ were low ($r = 0.06$ – 0.19), whereas they were higher in the current study ($r = 0.19$ – 0.34). The EACQ was originally developed and validated in a Spanish caregiver population, and the scale and its validity and reliability have not been tested among Finnish caregivers. As this study was conducted in a non-Spanish speaking and culturally very different country, our findings highlight the need to validate the EACQ in other caregiver populations to verify the usability of this scale in other cultural groups.

This study has several limitations. First, the participants were Finnish family caregivers and mostly women, thus limiting the generalizability of the results. In addition, the relatively high education level of the participants may not be typical of older family caregivers. Future research should include a sample with a greater heterogeneity of participant characteristics. The investigated sample participated voluntarily and was also recruited by different means, including a group of caregivers who were recruited through newspaper advertisement. Another limitation was the use of only self-report measures; thus, further studies should replicate these results with additional behavioral outcomes. Against our hypothesis, the avoidance measure developed specifically for caregivers showed only small correlations with psychological symptoms and quality of life, which may be due to the fact that instruments measuring avoidance strategies may not always be easy to understand for older adults. A limitation related to this scale was also the fact that the Finnish language version and the validity and reliability of this scale was not tested for the Finnish population. However, the scale was included as a preliminary test scale, aiming to examine how this scale would work in the Finnish population. In this sample, the mean age of the family caregivers was 72.9 (SD 6.1), ranging from 60 to 88 years. Finally, since the current data did not allow us to draw causal

relationships, longitudinal and randomized controlled studies are needed to investigate the protective impact of psychological flexibility over time.

Despite these limitations, we believe that this research enhances our understanding of the processes involved in caregiver distress, indicating that avoidant strategies are associated with psychological distress and low quality of life, thereby corroborating earlier research. Our results suggest that if our aim is to prevent depressive symptoms and anxiety in older caregivers and increase their quality of life, then we need to help them understand the deleterious effects of avoidance, in particular thought suppression. We also need to teach them constructive ways of handling their uncomfortable internal events, such as thoughts and feelings. As thought suppression is considered as an important factor in the development of mental disorders in older adults, this and other avoidance strategies should be recognized and assessed by the professionals when family caregivers are seeking help. The current study demonstrates the importance of fostering psychological flexibility skills among elderly caregivers, including skills to be open to unpleasant emotions or thoughts without trying to modify or avoid them and the ability to take actions toward a meaningful life. Knowledge on essential processes and processes of change will help to tailor intervention strategies to target these processes (Hofmann & Hayes, 2019) in caregivers. An approach consistent with these treatment strategies is acceptance and commitment therapy (ACT), which offers a wide range of tools and practices to work with EA, offering acceptance-based coping strategies to handle suppression and assists family caregivers in identifying their true values and devoting more time for themselves instead of focusing only on their caregiving role. Indeed, studies suggest that ACT with family caregivers is effective for the treatment of depression and anxiety, and well-received by the family caregivers (Han et al., 2021; Losada et al., 2015; Marquez-Gonzalez et al., 2020). As we are faced with increasing numbers of older adults and family caregivers, it is essential that health professionals and other groups working with family caregivers are educated about both core processes of change and the adverse effects of avoidant coping strategies on psychological well-being and quality of life in older adults. In conclusion, the current study especially highlights the role of thought suppression in symptoms of depression and anxiety among older caregivers.

Declaration of competing interest

Given their role as an Editorial Board Member, Lappalainen R. had no involvement in the peer-review of this article and had no access to information regarding its peer-review. All other authors have no conflicts of interest related to this manuscript.

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