

# **Prognostic factors of loneliness in elderly**

A cross-sectional research design in the Dutch community

Iris Doms (3973859)

Utrecht University

Faculty of Social Sciences

Clinical Psychology

MA: Thesis Clinical Psychology (201500819)

Supervisor: Lotte Gerritsen, PhD

10 September 2019

Word count: 4972

## **Table of contents**

Abstract	3.
Introduction	4.
Methods	7.
Results	10.
Discussion	14.
References	17.
Appendix I: Introduction letter	20.
Appendix II: Informed consent	21.
Appendix III: Questionnaire	22.

## **Abstract**

Loneliness is a common form of suffering in elderly and interventions are needed. The main objective of this study is to uncover prognostic factors for social loneliness, emotional loneliness and overall loneliness to gain more insight to develop these interventions. Associations between loneliness and social-demographic attributes, physical health support and age discrimination were explored. Seventy Dutch elderly have filled out a paper questionnaire. Bivariate analyses were used to discover associations, followed by multiple regression analyses with backward elimination. Experienced and perceived age discrimination were found to be positively correlated with all types of loneliness. Having long-term diseases was positively correlated with social and overall loneliness, whereas being male only was positively correlated with overall loneliness. Additionally, age was positively correlated with emotional loneliness and having a partner was negatively correlated with emotional loneliness. The results of multivariate analyses with backward elimination show that experienced age discrimination and social support have an important role in predicting levels of loneliness in elderly. For social loneliness these two factors explained 13.8% of the variance, for emotional loneliness they explained 25.9% of the variance and for overall loneliness they explained 24.5% of the variance. When doing a second multiple regression with these variables while adding the variables with a significant correlation in the bivariate analyses, the only notable difference was that experienced age discrimination and having a partner accounted for 28.3% of the variance of emotion loneliness. Having a partner was found to be a suppressor variable for social support. Future research should consider more prognostic factors to create, expand and validate a prognostic model that could select elderly with an increased risk of being lonely, so that interventions can be more specifically tailored to this age group.

## Introduction

The Netherlands is facing an aging population, with seven million individuals aged fifty and over comprising almost forty per cent of the population (Central Bureau for Statistics; CBS, 2018a). Prognoses from CBS (2018b) show an upward trend of the greying population in the next thirty years. This relative and absolute rise of elderly puts pressure on society and calls for extra emphasis on the challenges this age group faces (Ory, Hoffman, Hawkins, Sanner & Mockenhaupt, 2003). Among those challenges, loneliness is a common source of suffering for the elderly (Perissinotto, Cenzer & Covinsky, 2012). Loneliness is linked to a decrease in wellbeing in the form of depression, sleeping problems and disturbed appetite (de Jong-Gierveld, 1998). Furthermore, loneliness is a predictor for lower quality of life, functional decline and indicates an increased mortality risk among older populations (Chalise, Kai & Saito, 2010; Perissinotto et al., 2012; Tilvis, Laitale, Routasalo & Pitkälä, 2011). Whilst the negative consequences are well researched, increased attention is needed for the prognostic factors of loneliness. By studying these factors in this particular age group, appropriate interventions can be developed in the future.

De Jong-Gierveld (1998) describes the concept of loneliness as the manner in which individuals perceive, experience and evaluate the lack of communication with other people. The core elements of this concept are an unwelcome feeling of lack or loss of companionship, the negative, unpleasant aspects of missing certain relationships as well as missing a certain level of quality in one's relationships. Although people with larger social networks are less likely to report loneliness, loneliness is more strongly associated with qualitative than with quantitative characteristics of relationships (Dykstra & Fokkema, 2007; de Jong-Gierveld, 1998; Pinquart & Sorensen, 2001). Weiss (1974) differentiated between social loneliness and emotional loneliness. Social loneliness is associated with the absence of community. Social isolation marks or leads to the loss of a supportive network. A wider circle of friends and acquaintances that could give a sense of belonging is lacking. Emotional loneliness is associated with the loss or absence of an attachment figure. Emotional isolation refers to feelings of desolation and not having someone to turn to. Existing relationships with friends and colleagues were found to offer insufficient compensation for the absence of a significant other (Drennan et al., 2008; Dykstra & Fokkema, 2007; Weiss, 1974).

It is important to determine what previous studies regard as old age when investigating the prognostic factors of loneliness, to ensure a comparison is being made within the same age

group. The results of approximately forty surveys mentioned in the review of Dykstra (2009) suggest that loneliness is common only among individuals over eighty years of age. Between twenty and thirty per cent of people aged sixty-five to seventy-nine report that they feel lonely often, whereas forty to fifty per cent of those aged eighty and over reported the same levels of loneliness.

Not only associations between age and loneliness are documented in previous studies; there are multiple social-demographic attributes that seem to correlate with the loneliness experienced by elderly. For example, loneliness is more common in women and they report significantly higher levels of loneliness than men (Pinquart & Sörensen, 2001; Steptoe, Shankar, Demakakos & Wardle, 2013). Additionally, non-married status or being widowed was found to be a prognostic factor in twenty-five studies, according to a review from Cohen-Mansfield, Hazan, Lerman & Shalom (2016). Living in a nursing home or a residential home predicted loneliness in three studies in this review (Pinquart and Sorensen, 2001; Prieto-Flores, Forjaz, Fernandez-Mayoralas, Rojo-Perez & Martinez-Martin, 2001; Savikko, Routasalo, Tilvis, Strandberg & Pitkälä, 2005). Lastly, lower levels of education were found to be a prognostic factor for loneliness in older adults in fifteen studies that were reviewed by Cohen-Mansfield et al. (2016).

Along with these social-demographic attributes, physical health, social support and age discrimination also seem to influence the levels of loneliness in the elderly population. Nummela, Seppänen & Uutela (2011) found that loneliness is a contributor to poor self-reported health among aging people, whereas the absence of loneliness as well as decreased loneliness is a contributor to favourable self-reported health. The concepts of loneliness and lack of social support have a great conceptual overlap, therefore it is important to first differentiate between the two when considering social support as a predictor for loneliness. The difference essentially lies in that the first indicates feeling alone and the second indicates being alone (Utz, Swenson, Caserta, Lund & deVries, 2013). Individuals who reported the greatest levels of social support reported the lowest levels of loneliness. Social support of friends and family appears to be an important protective factor against loneliness, but friends provide a slightly greater protective advantage (Utz et al. 2013). However, deficits in the quality of contacts are more closely related to loneliness than deficits in the quantity of contacts (Pinquart & Sörensen, 2001). Furthermore, a study by Sutin, Stephan, Carretta & Terracciano (2015) researched multiple forms of discrimination and their relation to a diverse branch of indices of health, including the effects of age discrimination on loneliness. Age discrimination, like all other forms of discrimination that were researched, was associated

with greater feelings of loneliness. The results from this study suggest that perceiving the society as hostile is associated with pervasive feelings of loneliness in elderly. The study points out that an individual may interpret discrimination as an indication that they do not fit in the society in which they live.

Not every older person will feel lonely and it varies which factors will play a role for each individual to develop feelings of loneliness. The main objective of this study is to determine the probability of loneliness with previously described prognostic factors in elderly. It will test associations between social-demographic attributes, physical health, social support and age discrimination with social loneliness, emotional loneliness and overall loneliness to uncover which of these factors have a substantial impact on the levels of loneliness in elderly.

## **Methods**

### **Design**

This research employed a cross-sectional survey design with a convenience sample in order to study which individual factors are associated with loneliness in elderly and which factors have the strongest predictor value for loneliness in elderly.

### **Participants**

Participants were recruited in two living communities for elderly in the Netherlands, one in Eindhoven and one in Gouda. Residents were invited to participate in the study via letter. An introduction to the study was handed out and an informed consent was signed before one could take part in the study (see appendix I + II). Questionnaires could be filled out during three meetings in a common room in their living community, with the possibility to ask questions in case of ambiguities. Potential participants were considered ineligible if they were under 55 years of age, or when their psychical and/or mental health was too poor to allow them to complete the self-report questionnaires. In the living community in Eindhoven the response rate was 53 per cent, the response rate in Gouda is unknown. Possible reasons for the non-response rate are: some never visit the common room, their schedule was not free during the meetings, the letter was not collected from their mailbox or their psychical health did not allow them to visit the common room. Seventy elderly participated in this study.

### **Data collection**

A questionnaire (see appendix III) was deployed to collect data. The choice was made to use a paper questionnaire instead of a digital version, as it is likely that the target group is less familiar with working on computers. By doing so, relatively many elderly people were able to complete the questionnaire in a short amount of time. Another reason for using questionnaires is that subjects such as loneliness can be hard to discuss with a researcher and could be influenced by the opinion of interviewers. Moreover, the questions were standardised, providing clear answers and fitting material for statistical analyses suiting prognostic research. The environment in which the questionnaires were filled out might have affected the quality of the data. The common room is a public space and not all people present were part of this study. People were chatting, playing games and ordering drinks, which could have been distracting. The instruction was given to fill out the questionnaire by oneself, but it was observed that some people discussed the questions with their neighbours.

## **Instruments**

The first part of the questionnaire was about social-demographic attributes. To define one's gender participants were presented with the options man and woman. Date of birth was requested to be able to calculate one's age. Marital status was categorised in five options: married, cohabiting, divorced, widowed and unmarried. Living arrangement was categorised in four options: homeowner, senior residence, sheltered home and nursing home. The question that identified the highest level of education obtained was open-ended.

Physical health was studied by mapping chronic diseases as well as long-term diseases. Participants were asked if they had experienced one of the following chronic diseases in the past twelve months: diabetes, a stroke, a heart attack, other heart conditions or cancer. Participants were also asked if they had suffered any of the listed fourteen long-term diseases in the past twelve months. Examples of the diseases that were mapped are: migraine, high blood pressure, asthma and rheumatism.

Social support was measured by how many times one has contact with their partner, children, siblings, friends and acquaintances. Participants could tick if one sees their contact daily, weekly, monthly, every year or that it did not apply to their situation.

Age discrimination was looked into on the basis of situations that could have happened to the participants in the past twelve months. Participants were asked if one experienced situations regarding age discrimination with six yes-or-no-questions. Examples of these items are: 'Did you experience that people explain things overly clear to you?' and 'Did you experience that people assumed you are slow?'. When their response was positive, participants were asked if one perceived the situation as discrimination. One could tick one of the following options: no, yes and maybe.

### Loneliness

De Jong-Gierveld Loneliness Scale (de Jong-Gierveld & Kamphuis, 1985) was used to measure both social and emotional loneliness. The scale assesses severe feelings of loneliness as well as less intense loneliness feelings, consists of negative as well as positive items and represents a latent continuum of deprivation (de Jong-Gierveld & Kamphuis, 1985). Items such as 'There is always someone I can talk to about my day-to-day problems', 'I miss having a really close friend' and 'I often feel rejected' are included in this questionnaire. Participants could tick one of the following answering options: no, more or less and yes. Unfortunately, De Jong-Gierveld Loneliness Scale was not administered completely, because the last item 'I can call on my friends whenever I need them' was unknowingly dropped from the



questionnaire. When looking at the psychometric properties of the questionnaire, scale reliability with Cronbach's alpha or rho is observed to be in the .80 to .90 range and the homogeneity of the scale with Loevingers' *H* is in the .30 to .50 range, which is sufficient but not very strong (de Jong-Gierveld & van Tilburg, 1999).

### **Processing and analysing the data**

Data were analysed using the IBM Statistical Package for Social Science (SPSS) version 25.0 for iOS 12. Before analysing, the response categories for marital status and housing arrangement were merged into two categories. The five response options for marital status merged into the categories partner and no partner. Two of the four response options for housing arrangement were not used by participants and were deleted from the data, being a homeowner or living in a senior residence remained. Participants' answers to the question about highest level of education yielded five categories: primary school, secondary school, secondary vocational education, higher professional education and university education.

The two questions about physical health accounted for two subscales: chronic diseases and long-term diseases, whereby the number of times participants ticked yes were added up. The items which mapped social support were added together, where daily was coded as a four, weekly was coded as a three, monthly was coded as a two, yearly was coded as one and if it did not apply to their situation it was coded as zero. The two questions assessing age discrimination accounted for the two subscales: experienced age discrimination and perceived age discrimination. The scores for the scales of social loneliness, emotional loneliness and overall loneliness were calculated according to the manual of the Jong-Gierveld Loneliness Scale (de Jong-Gierveld & van Tilburg, 1999).

Following the descriptive analyse of the study variables, bivariate analyses were performed to identify single correlations between the dependent and the independent variables. Normality of the variables was inspected with the Shapiro-Wilk test and it was found that the assumption of normality was violated for every variable except for age and social support. Therefore Spearman's rank-order was used to calculate the correlations. Subsequently, multiple regression analyses with backward elimination, where all independent variables were entered into the models, were used to predict social, emotional and overall loneliness. Assumptions related to multivariate analyses were inspected and will be discussed in the results section. Lastly, multiple regression analyses with backward elimination were performed to explore possible improvements to the predicting power of these models by adding the significant single correlations from the bivariate analyses to the models.

## Results

### Descriptive analyses

The demographic characteristics of the participants, the responses on the Jong-Gierveld Scale of Loneliness (de Jong-Gierveld & Kamphuis, 1985) and the responses on the physical health, social support and age discrimination items are summarised in Table 1.

Table 1

*Participants' demographic characteristics*

Characteristics	<i>n</i> (%)	<i>n</i> , <i>M</i> (SD), range
Gender		
Women	46 (65.7)	
Men	24 (34.3)	
Age		70, 71.49 (11.31) 55 – 98
Marital Status		
Partner	39 (55.7)	
No partner	31 (44.3)	
Housing arrangement		
Homeowner	38 (54.3)	
Senior residence	32 (45.7)	
Level of education		
Primary school	5 (7.1)	
Secondary school	27 (38.6)	
Secondary vocational education	15 (21.4)	
Higher professional education	12 (17.1)	
University education	11 (15.7)	
Loneliness total		68, 2.46 (2.60), 0 – 10
Social loneliness		68, 1.35 (1.33), 0 – 4
Emotional loneliness		61, 1.20 (1.58), 0 – 6
Physical health		
Chronic diseases		70, .54 (.77), 0 – 3
Long-term diseases		70, 1.47 (1.22), 0 – 5
Social support		70, 11.11 (3.35), 3 – 17
Age discrimination		
Experienced		70, .63 (.89), 0 – 3
Perceived		70, .69 (1.13), 0 – 6

## Correlational analyses

To assess the size and direction of the linear relationships between loneliness and the independent variables, Spearman's rank-order correlation coefficients ( $r_s$ ) were calculated. Significant correlations will be mentioned; all other analyses are presented in Table 2. Spearman's rho indicated the presence of a weak positive correlation between social loneliness and long-term disease,  $r_s = .244$ ,  $p < .05$ , two-tailed,  $N = 68$ . A weak and positive correlation was also found between social loneliness and experienced and perceived age discrimination,  $r_s = .293$ ,  $p < .05$ , two-tailed,  $N = 68$  and  $r_s = .276$ ,  $p < .05$ , two-tailed,  $N = 68$ . Between the variables emotional loneliness and age a positive and weak correlation was found,  $r_s = .284$ ,  $p < .05$ , two-tailed,  $N = 61$ . A negative and weak correlation between emotional loneliness and having a partner was found,  $r_s = -.272$ ,  $p < .05$ , two-tailed,  $N = 61$ . Positive and moderate correlations between emotional loneliness and experienced and perceived age discrimination were found,  $r_s = .488$ ,  $p < .01$ , two-tailed,  $N = 61$  and  $r_s = .355$ ,  $p < .01$ , two-tailed,  $N = 61$ . Furthermore, positive and weak correlations between loneliness and male gender and long-term disease were found,  $r_s = .244$ ,  $p < .05$ , two-tailed,  $N = 68$  and  $r_s = -.267$ ,  $p < .05$ , two-tailed,  $N = 68$ . The last correlations found were between loneliness and experienced and perceived age discrimination and were positive and moderate,  $r_s = .437$ ,  $p < .01$ , two-tailed,  $N = 68$  and  $r_s = .350$ ,  $p < .01$ , two-tailed,  $N = 68$ .

Table 2

*Associations between demographic, physical health, social support and age discrimination variables and social loneliness*

Variable	Social Loneliness		Emotional Loneliness		Loneliness	
	$r_s$	$p$	$r_s$	$p$	$r_s$	$p$
Male gender	.187	.126	.053	.684	.244*	.045
Age	.034	.785	.284*	.037	.058	.639
Partner	-.163	.184	-.272*	.034	-.182	.137
Homeowner	-.194	.114	-.232	.072	-.232	.057
Level of education	.076	.540	.050	.704	.067	.588
Chronic disease	.062	.617	.079	.547	.035	.779
Long-term disease	.244*	.045	.239	.063	.267*	.034
Social support	-.167	.174	-.228	.078	-.187	.128
Experienced age discrimination	.293*	.015	.488**	.000	.437**	.000
Perceived age discrimination	.276*	.022	.355**	.005	.350**	.003

\*\* . Correlation is significant at the .01 level (2-tailed)

\* . Correlation is significant at the .05 level (2-tailed)

### Multivariate analyses

To estimate the proportion of variance in loneliness that can be accounted for by the independent variables, multiple regression analyses with backward elimination were performed. Prior to interpreting the results of the multiple regression analyses, several assumptions were evaluated. Firstly, stem-and-leaf plots indicated that age and social support were normally distributed and level of education had only a mild departure from normality. The variables of loneliness, age discrimination and diseases were positively skewed. Univariate outliers were inspected with the use of boxplots and were found in the data from age discrimination and diseases. No good reason was found to adjust or delete these outliers from the data set and doing so would bias results in this fairly small data set. Secondly, inspection of the normal probability plot of standardised residuals as well as the scatterplot of standardised residuals against standardised predicted values indicated that the assumptions of normality, linearity and homoscedasticity of residuals were met. Thirdly, Mahalanobis distance did not exceed the critical chi-square value for any cases in the data file, indicating that multivariate outliers were not of concern.

After backward elimination, the regression models of social, emotional and overall loneliness existed of social support and experienced age discrimination. In combination, these two variables accounted for 13.8% of the variability in social loneliness,  $R^2 = .138$ , adjusted  $R^2 = .112$ ,  $F(2,65) = 5.22$ ,  $p = .008$ . Furthermore, the variables accounted for 25.9% of the variability in emotional loneliness,  $R^2 = .259$ , adjusted  $R^2 = .234$ ,  $F(2,58) = 10.16$ ,  $p = .000$ . Lastly, the variables accounted for 24.5% of the variability in overall loneliness,  $R^2 = .245$ , adjusted  $R^2 = .222$ ,  $F(2,65) = 10.53$ ,  $p = .000$ . The unstandardized ( $B$ ) and standardized ( $\beta$ ) regression coefficients for the predictors in the regression model are reported in Table 3.

Table 3

*Unstandardized ( $B$ ) and standardized ( $\beta$ ) regression coefficients for each predictor in a multiple regression model predicting loneliness*

Variable		$B$ [95% CI]	$\beta$
Social loneliness	Social support	-.077 [-.169, .015]	-.193
	Experienced age discrimination	.499 [.154, .843]**	.334
Emotional loneliness	Social support	-.149 [-.255, -.043]**	-.319
	Experienced age discrimination	.714 [.326, 1.102]**	.417
Loneliness	Social support	-.209 [-.378, -.041]*	-.268
	Experienced age discrimination	1.275 [.645, 1.904]**	.437

\*  $p = .05$  \*\*  $p = .01$

To test the hypothesis that the significant single correlations from the bivariate analyses could contribute to a significant proportion of the variance in loneliness, beyond that already accounted for by social support and experienced age discrimination, multiple regression analyses with backward were performed again. Long-term disease and perceived age discrimination were added to the regression model of social loneliness. After backward elimination, the model only consisted of experienced age discrimination. This variable accounted for 10.1% of the variability of social loneliness,  $R^2 = .101$ , adjusted  $R^2 = .088$ ,  $F(1,66) = 7.45$ ,  $p = .008$ . For emotional loneliness, age, having a partner and perceived age discrimination were added to the model with social support and experienced age discrimination. After backward elimination, experienced age discrimination and having a partner remained. Together, these two variables accounted for 28.3% of the variance in emotional loneliness,  $R^2 = .283$ , adjusted  $R^2 = .258$ ,  $F(2,58) = 11.44$ ,  $p = .000$ . It indicated that social support was subject to a suppressor variable when being removed from the model. Through trail runs of the second block of variables with rotated variable removal, having a partner was identified as the variable mostly responsible for the suppression effect. For overall loneliness, gender, long-term disease and perceived age discrimination were entered in the model. After backward elimination, the model for overall loneliness stayed the same with the variables of social support and experienced age discrimination, which accounted for for 24.5% of the variability in overall loneliness,  $R^2 = .245$ , adjusted  $R^2 = .222$ ,  $F(2,65) = 10.53$ ,  $p = .000$ . The unstandardized ( $B$ ) and standardized ( $\beta$ ) regression coefficients, and squared semi-partial correlations ( $sr^2$ ) for each predictor in step 2 of the regression models are reported in Table 4.

Table 4

*Unstandardized ( $B$ ) and standardized ( $\beta$ ) regression coefficients for each predictor in a multiple regression model predicting loneliness*

Variable		$B$ [95% CI]	$\beta$
Social loneliness	Experienced age discrimination	.476 [.128, .824]**	.318
Emotional loneliness	Experienced age discrimination	.766 [.382, 1.151]**	.448
	Partner	-1.131 [-1.843, -.419]**	-.357
Loneliness	Social support	-.209 [-.378, -.041]*	-.268
	Experienced age discrimination	1.275 [.645, 1.904]**	.437

\*  $p = .05$  \*\*  $p = .01$

## Discussion

This report reviewed associations between social-demographic attributes, physical health, social support, and age discrimination with social loneliness, emotional loneliness and overall loneliness in elderly. The study had the intention to uncover factors that have a substantial impact on the levels of loneliness in elderly. By identifying three important prognostic factors this study was partially successful in doing so.

The results of the present study indicate that experienced age discrimination and social support combined play an important role in predicting levels of loneliness in elderly. For social loneliness these two factors explained 13.8% of the variance, for emotional loneliness they explained 25.9% of the variance and for overall loneliness they explained 24.5% of the variance. When adding the significant correlations from the bivariate analyses for a second multiple regression analyses with backward elimination, the models of social and overall loneliness did not improve. However, in the case of emotional loneliness, experienced age discrimination and having a partner remained in the new model. These two variables explained 28.3% of the variance for emotional loneliness, which is an increase of explained variance 3.8%. Having a partner was identified as a suppressor variable for social support.

On bivariate level, having a partner was only negatively associated with emotional loneliness and not with social loneliness or overall loneliness. This is in line with the difference between the concepts of social and emotional loneliness, where the latter is linked with the loss or absence of an attachment figure (Weis, 1974). Moreover, existing relationships with friends and colleagues were found to offer insufficient compensation for the absence of a significant other regarding one's emotional loneliness (Dykstra & Fokkema, 2007). Previous studies also reported that having a partner was a more important protector against emotional loneliness, which is also in agreement with this study (Drennan et al., 2008).

Furthermore, results on a bivariate level indicated that experienced and perceived age discrimination are the only variables positively associated with all types of loneliness. Notably, experienced age discrimination also was a predictor with all types of loneliness in the multiple regression analyses, whilst perceived age discrimination was not. This could mean that it is worse to experience these types of situations, whether elderly label it as discrimination or not. The results on perceived age discrimination are in line to the study of Sutin, Stephan, Carretta & Terracciano (2015) where perceived age discrimination was found to be associated with greater feelings of loneliness. A further comparison could not be made, since the study did not differentiate between perceived and experienced age discrimination.

Interestingly, it is not clear which of these two variables was elevated first. The question raises if it is possible that the lonelier an older person gets, the more discriminated they feel. Or that the more discriminated one feels, the lonelier they get. Further research should look into this matter.

This study can paint a clearer picture for possible interventions on tackling loneliness within the older community. When looking at social support and having a partner more research is needed to explore how emotional loneliness is impacted by these constructs and how emotional loneliness relates to negative outcomes for the elderly. It seems difficult to create interventions for not having a significant other, whilst effective interventions for enhancing social support already have been implemented (Cacioppo et al., 2009).

When looking at experienced age discrimination, which is the most considerable prognostic factor in this study, interventions could be implemented on both sides of the exchange. When one is treated unfairly on the basis of their age, it is a case of age discrimination (Sutin et al., 2015). Dutch society, and more especially groups that are in frequent contact with the elderly, should be informed about age discrimination and the effects it can have on the levels of loneliness of older people. On the other hand, studies show that lonely individuals already have increased sensitivity to social threats and preferentially attend to negative information (Cacioppo, Norris, Decety, Monteleone & Nusbaum, 2009). Interventions focusing on addressing these maladaptive social cognitions lower levels of loneliness (Masi, Chen, Hawkley & Cacioppo, 2011).

Certain aspects in relation to the study methods could be improved. Firstly, sources of error due to confounding and bias are common in retrospective studies and there is a general lack of longitudinal studies in the research of loneliness in elderly (Hess, 2004; Victor & Bowling, 2012). The best design to answer prognostic questions would be a prospective cohort study (Moons, Royston, Vergouwe, Grobbee & Altman, 2009). However, this study looked at multiple variables, whereby there is a smaller chance on confounding. It is also possible that elderly that participated in this study, were healthier, more active and less lonely than the people who did not participate at this study, which could cause less valid results. Nonetheless, the response rate for this study was fairly high, making this limitation of lesser effect. The multiple variables and the fairly high response rate are indications that the results of this study are sufficiently interpretable.

Secondly, the study was carried out in only two accommodations for elderly and participants used only two of the four given options of living arrangements. As a result, the findings of this study cannot be generalised to the entire older population in the Netherlands,

but are more generalizable for older persons that are homeowners or living in senior residences. Thirdly, the questionnaire did not inquire about work or parents, whilst participants were under the impression that these factors could definitely have a protective effect against feeling lonely. This was the most frequently given feedback from the participants. Fourthly and lastly, there are better options for questionnaires available to measure the constructs of physical health and social support. As mentioned earlier, deficits in the quality of contacts are more closely related to loneliness than deficits in the quantity of contacts, whereas this study still focused on the quantity of contacts (Pinquart & Sörensen, 2001). A suitable questionnaire for measuring this construct in the future could be the Multidimensional Scale of Perceived Social Support (MSPSS; Zimet, Dahlem, Zimet & Farley, 1988). In addition to mapping disease count, the Physical Health Questionnaire (PHQ; Schat, Kelloway & Desmarais, 2005) could be used for studying physical health. The instrument is rather brief and measures four dimensions of somatic health: gastrointestinal problems, headaches, sleep disturbances and respiratory illness (Schat et al., 2005). Results will be more meaningful and comparable by measuring these constructs with more validated and extensive questionnaires.

In addition to the shortcomings of this study, future research should consider more factors to create, expand and validate a prognostic model that could select elderly with an increased risk of being lonely. A prognostic model as such would provide objective estimates of the probability that individuals will become lonely and would help policy makers to take action on this matter. Many nations around the world already suggest that they are facing a loneliness epidemic and the effects of loneliness are emerging as a public health problem, whilst thorough prognostic research that could identify elderly at risk of feeling lonely is still lacking (Holt-Lunstad, 2017; Miller, 2011). The time is now for scholars to take on the important challenge to build a clear and useable prognostic model to predict loneliness in elderly.



## References

- Cacioppo, J. T., Norris, C. J., Decety, J., Monteleone, G., & Nusbaum, H. (2009). In the eye of the beholder: individual differences in perceived social isolation predict regional brain activation to social stimuli. *Journal of cognitive neuroscience*, 21(1), 83-92.
- Central Bureau for Statistics (2018a, October 30). *Population; key figures* [Data file]. Retrieved from <https://opendata.cbs.nl/statline/#/CBS/nl/dataset/37296ned/table?ts=1568113250935>
- Central Bureau for Statistics (2018b, December 18). *Prognosis population; key figures, 2018 - 2060* [Data file]. Retrieved from <https://opendata.cbs.nl/statline/#/CBS/nl/dataset/84345NED/table?ts=1568112789030>
- Chalise, H. N., Kai, I. & Saito, T. (2010). Social support and its correlation with loneliness: a cross-cultural study of Nepalese older adults. *The International Journal of Aging and Human Development*, 71, 115–138.
- Cohen-Mansfield, J., Hazan, H., Lerman, Y., & Shalom, V. (2016). Correlates and predictors of loneliness in older-adults: a review of quantitative results informed by qualitative insights. *International Psychogeriatrics*, 28(4), 557-576.
- Drennan, J., Treacy, M., Butler, M., Byrne, A., Fealy, G., Frazer, K., & Irving, K. (2008). The experience of social and emotional loneliness among older people in Ireland. *Ageing & Society*, 28(8), 1113-1132.
- Dykstra, P. A. (2009). Older adult loneliness: myths and realities. *European journal of ageing*, 6(2), 91.
- Dykstra, P. A., & Fokkema, T. (2007). Social and emotional loneliness among divorced and married men and women: Comparing the deficit and cognitive perspectives. *Basic and applied social psychology*, 29(1), 1-12.
- Hess, D. R. (2004). Retrospective studies and chart reviews. *Respiratory care*, 49(10), 1171-1174.
- Holt-Lunstad, J. (2017). The potential public health relevance of social isolation and loneliness: Prevalence, epidemiology, and risk factors. *Public Policy & Aging Report*, 27(4), 127-130.
- de Jong-Gierveld, J. (1998). A review of loneliness: concept and definitions, determinants and consequences. *Reviews in Clinical Gerontology*, 8(1), 73-80.
- de Jong-Gierveld, J., & Kamphuls, F. (1985). The development of a Rasch-type loneliness scale. *Applied psychological measurement*, 9(3), 289-299.
- de Jong-Gierveld, J., & Tilburg, T. G. (1999). *Manual of the Loneliness Scale*. Retrieved from: [https://home.fsw.vu.nl/tg.van.tilburg/manual\\_loneliness\\_scale\\_1999.html](https://home.fsw.vu.nl/tg.van.tilburg/manual_loneliness_scale_1999.html)

- Masi, C. M., Chen, H. Y., Hawkey, L. C., & Cacioppo, J. T. (2011). A meta-analysis of interventions to reduce loneliness. *Personality and Social Psychology Review*, 15(3), 219-266.
- Miller, G. (2011). Why loneliness is hazardous to your health. *Science*, 331, 138-140.
- Moons, K. G., Royston, P., Vergouwe, Y., Grobbee, D. E., & Altman, D. G. (2009). Prognosis and prognostic research: what, why, and how?. *Bmj*, 338, b375.
- Nummela, O., Seppänen, M., & Uutela, A. (2011). The effect of loneliness and change in loneliness on self-rated health (SRH): a longitudinal study among aging people. *Archives of Gerontology and Geriatrics*, 53(2), 163-167.
- Ory, M., Hoffman, M. K., Hawkins, M., Sanner, B., & Mockenhaupt, R. (2003). Challenging aging stereotypes: Strategies for creating a more active society. *American journal of preventive medicine*, 25(3), 164-171.
- Perissinotto, C. M., Cenzer, I. S., & Covinsky, K. E. (2012). Loneliness in older persons: a predictor of functional decline and death. *Archives of internal medicine*, 172(14), 1078-1084.
- Pinquart, M., & Sorensen, S. (2001). Influences on loneliness in older adults: A meta-analysis. *Basic and applied social psychology*, 23(4), 245-266.
- Prieto-Flores, M. E., Fernandez-Mayoralas, G., Forjaz, M. J., Rojo-Perez, F., & Martinez-Martin, P. (2011). Residential satisfaction, sense of belonging and loneliness among older adults living in the community and in care facilities. *Health & Place*, 17(6), 1183-1190.
- Savikko, N., Routasalo, P., Tilvis, R. S., Strandberg, T. E., & Pitkälä, K. H. (2005). Predictors and subjective causes of loneliness in an aged population. *Archives of gerontology and geriatrics*, 41(3), 223-233.
- Schat, A. C., Kelloway, E. K., & Desmarais, S. (2005). The Physical Health Questionnaire (PHQ): construct validation of a self-report scale of somatic symptoms. *Journal of occupational health psychology*, 10(4), 363.
- Stephoe, A., Shankar, A., Demakakos, P., & Wardle, J. (2013). Social isolation, loneliness, and all-cause mortality in older men and women. *Proceedings of the National Academy of Sciences*, 110(15), 5797-5801.
- Sutin, A. R., Stephan, Y., Carretta, H., & Terracciano, A. (2015). Perceived discrimination and physical, cognitive, and emotional health in older adulthood. *The American Journal of Geriatric Psychiatry*, 23(2), 171-179.
- Tilvis, R. S., Laitala, V., Routasalo, P. E., & Pitkälä, K. H. (2011). Suffering from loneliness indicates significant mortality risk of older people. *Journal of aging research*, 2011.

- Utz, R. L., Swenson, K. L., Caserta, M., Lund, D., & deVries, B. (2013). Feeling lonely versus being alone: loneliness and social support among recently bereaved persons. *Journals of Gerontology Series B: Psychological Sciences and Social Sciences*, 69(1), 85-94.
- Victor, C. R., & Bowling, A. (2012). A longitudinal analysis of loneliness among older people in Great Britain. *The Journal of psychology*, 146(3), 313-331.
- Weiss, R. S. (1974). Loneliness: The experience of emotional and social isolation. Cambridge, United States: MIT Press.
- Zimet, G. D., Dahlem, N. W., Zimet, S. G., & Farley, G. K. (1988). The multidimensional scale of perceived social support. *Journal of personality assessment*, 52(1), 30-41.

## **Appendix I: Introduction letter**

Beste meneer/mevrouw,

Hierbij willen wij u uitnodigen om deel te nemen aan een onderzoek dat wordt uitgevoerd onder verantwoordelijkheid van afdeling Klinische Psychologie, onderdeel van de Universiteit Utrecht.

Het onderzoek waar wij u medewerking voor willen vragen is getiteld “Eenzaamheid bij senioren”.

Hiervoor zult u een vragenlijst invullen over uw sociale contacten, uw gezondheid, mogelijke stressvolle gebeurtenissen en gevoelens van eenzaamheid.

Doel van het onderzoek is het genereren van meer inzicht in welke aspecten bijdragen aan gevoelens van eenzaamheid bij senioren.

Het onderzoek duurt ongeveer 30 minuten.

Omdat dit onderzoek wordt uitgevoerd onder de verantwoordelijkheid van de Universiteit Utrecht, heeft u de garantie dat:

- 1) Uw anonimiteit is gewaarborgd en dat uw antwoorden of gegevens onder geen enkele voorwaarde aan derden worden verstrekt, tenzij u hiervoor van te voren uitdrukkelijke toestemming hebt verleend.
- 2) U zonder opgaaf van redenen kunt weigeren mee te doen aan het onderzoek of u deelname voortijdig kunt afbreken. Ook kunt u achteraf u toestemming intrekken voor het gebruik van uw antwoorden of gegevens voor het onderzoek.
- 3) U zult binnen uiterlijk vijf maanden na afloop van het onderzoek de beschikking krijgen over een onderzoeksrapportage waarin de algemene resultaten van het onderzoek worden toegelicht.

Voor meer informatie over dit onderzoek en de uitnodiging tot deelname kunt u te allen tijde contact opnemen met de projectleider:

Dr. Lotte Gerritsen.  
Telefoon: 030-2534620  
Email: l.gerritsen@uu.nl

Wij hopen u hiermee voldoende te hebben geïnformeerd en danken u bij voorbaat hartelijk voor uw deelname aan dit onderzoek dat voor ons van grote waarde is.

Met vriendelijke groet,

Dr. Lotte Gerritsen  
Frank Verkerk & Iris Doms (studenten Klinische Psychologie)

## Appendix II: Informed consent

*Studie: Eenzaamheid bij senioren*

Ik heb de informatie voor de deelnemer gelezen. Ik kon aanvullende vragen stellen. Mijn vragen zijn genoeg beantwoord. Ik had genoeg tijd om te beslissen of ik meedoe.

Ik weet dat meedoen helemaal vrijwillig is. Ik ben me ervan bewust dat ik op ieder moment kan beslissen om toch niet mee te doen. Daarvoor hoef ik geen reden te geven.

Ik weet dat sommige mensen mijn gegevens kunnen zien. Die mensen staan vermeld in de informatie(brief). Zelf heb ik het recht om de wijze waarop mijn gegevens zijn opgeslagen in te zien.

Ik geef toestemming om mijn gegevens te gebruiken, voor de doelen die in de informatie(brief) staan. Mocht er aanleiding zijn om de gegevens te gebruiken voor een ander onderzoeksdoel dan zal opnieuw toestemming aan mij worden gevraagd.

Ik geef toestemming om gegevens nog 10 jaar na afloop van dit onderzoek te bewaren voor nadere analyse in het kader van dit onderzoek (indien van toepassing).

Naam deelnemer:

Handtekening:

Datum : \_\_ / \_\_ / \_\_

-----  
Ik verklaar hierbij dat ik deze deelnemer voldoende heb geïnformeerd over het genoemde onderzoek.

Als er tijdens het onderzoek informatie bekend wordt die de toestemming van de deelnemer zou kunnen beïnvloeden, dan breng ik hem/haar daarvan tijdig op de hoogte op een wijze waardoor ik er zeker van ben dat de informatie de deelnemer bereikt heeft.

Naam onderzoeker (of diens vertegenwoordiger):

Handtekening:

Datum: \_\_ / \_\_ / \_\_

### Appendix III: Questionnaire

#### Vragenlijsten voor onderzoek naar eenzaamheid bij ouderen

Hartelijk dank dat u mee wil doen aan ons onderzoek. Bij deze treft u een drietal vragenlijsten.

Alles wat u invult zal anoniem worden verwerkt. Wij zullen zorgvuldig met uw gegevens omgaan.

Datum:

Nummer:

#### Vragenlijst 1 Algemene informatie en gezondheid

- 1) Wat is uw geslacht  
a) vrouw                      b) man
- 2) Wat is uw geboortedatum(dag/maand/jaartal): ...../...../.....
- 3) Wat is uw huwelijkse staat  
a) gehuwd                      b) samenwonend                      c) gescheiden                      d) weduwnaar/weduwe                      e) ongehuwd
- 4) Waar woont u?  
a) eigen woning                      b) aanleunwoning                      c) verzorgingstehuis                      d) seniorenwoning
- 5) wat is uw hoogst genoten opleiding? (bijvoorbeeld basisschool, middelbare school, LTS, universiteit etc.):  
.....

6) Kunt u hieronder aangeven hoe vaak u contact heeft met uw familie en vrienden/kennissen?

Relatie	dagelijks	wekelijks	maandelijks	jaarlijks	Niet van toepassing
Partner					
Kind(eren)					
Broers/zussen					
Vriend(en)					
Kennis(sen)					

**Hieronder volgen vragen over uw fysieke gezondheid**

Hieronder volgt een lijst van mogelijke chronische aandoeningen  
**Kunt u aangeven of u een van de volgende aandoeningen heeft?**

<b>Vraag 7: Heeft u suikerziekte?</b>	<b>Ja</b>	<b>Nee</b>
---------------------------------------	-----------	------------

<b>Vraag 8 :Heeft u <u>ooit</u> een beroerte, hersenbloeding of herseninfarct gehad?</b>	<b>Ja</b>	<b>Nee</b>
--	-----------	------------

<b>Vraag 9 : Heeft u <u>ooit</u> een hartinfarct gehad?</b>	<b>Ja</b>	<b>Nee</b>
---	-----------	------------

<b>Vraag 10 : Heeft u <u>in de afgelopen 12 maanden</u> een andere ernstige hartaandoening gehad (zoals hartfalen of angina pectoris)?</b>	<b>Ja</b>	<b>Nee</b>
--	-----------	------------

<b>Vraag 11 : Heeft u <u>ooit</u> een vorm van kanker (kwaadaardige aandoening) gehad?</b>	<b>Ja</b>	<b>Nee</b>
--	-----------	------------

12) Wilt u voor deze ziektes en aandoeningen met <i>ja</i> of <i>nee</i> aangeven of u die heeft of <u>in de afgelopen 12 maanden</u> heeft gehad?		
a.	Migraine of regelmatig ernstige hoofdpijn.	Ja Nee
b.	Hoge bloeddruk.	Ja Nee
c.	Vernauwing van de bloedvaten in de buik of benen (geen spataderen).	Ja Nee
d.	Astma of COPD (chronische bronchitis, longemfyseem).	Ja Nee
e.	Psoriasis.	Ja Nee
f.	Chronisch eczeem.	Ja Nee
g.	Duizeligheid met vallen.	Ja Nee
h.	Ernstige of hardnekkige darmstoornissen, langer dan 3 maanden.	Ja Nee
i.	Onvrijwillig urineverlies (incontinentie).	Ja Nee
j.	Gewrichtsslijtage (artrose, slijtagereuma) van heupen of knieën.	Ja Nee
k.	Chronische gewrichtsontsteking (ontstekingsreuma, chronische reuma, reumatoïde artritis).	Ja Nee
l.	Ernstige of hardnekkige aandoening van de rug (incl. hernia).	Ja Nee
m.	Andere ernstige of hardnekkige aandoening van de nek of schouder.	Ja Nee
n.	Andere ernstige of hardnekkige aandoening van ellenboog, pols of hand.	Ja Nee
o.	Heeft u nog een andere langdurige ziekte of aandoeningen gehad in de afgelopen 12 maanden.	Ja Nee



## Vragenlijst 2 Gelijke behandeling

### Inleiding

Iedereen in Nederland moet in gelijke gevallen gelijk behandeld worden. Toch komen sommige mensen minder gemakkelijk aan een baan, worden beledigd of uitgescholden op straat, of hebben zelfs met geweld te maken. Als dit soort dingen gebeuren omdat mensen bijvoorbeeld homo, gehandicapt, jood, vrouw, moslim, allochtoon, autochtoon, jong of oud zijn wordt dit discriminatie genoemd.

De volgende vragen gaan over de manier waarop mensen met elkaar omgaan.

**Mensen hebben soms een idee over elkaar, ook zonder dat ze elkaar kennen. Dat beeld hoeft niet altijd te kloppen. Hieronder leest u een aantal van dit soort situaties. Kunt u bij elke situatie aangeven of u dat in de afgelopen twaalf maanden heeft meegemaakt. En denkt u dat dit te maken heeft met discriminatie?**

13) Heeft u meegemaakt dat mensen...	Meegemaakt?		Denkt u dat dit met discriminatie te maken had?		
	Nee	Ja	Nee	Ja	twijfel
a) U dingen overdreven duidelijk gaan uitleggen?					
b) Extra voorzichtig met u omgaan?					
c) U niet vertrouwen?					
d) Denken dat u niet zelf beslissingen kan nemen?					
e) Denken dat u het heeft gedaan als er iets vervelends gebeurt?					
g) er van uitgaan dat u traag bent?					

### Vragenlijst 3 Eenzaamheid

Vraag 14		Antwoord		
		Nee	Min of meer	Ja
a)	Er is altijd wel iemand in mijn omgeving bij wie ik met mijn dagelijkse probleempjes terecht kan.			
b)	Ik mis een echt goede vriend of vriendin.			
c)	Ik ervaar een leegte om me heen.			
d)	Er zijn genoeg mensen op wie ik in geval van narigheid kan terugvallen.			
e)	Ik mis gezelligheid om me heen.			
f)	Ik vind mijn kring van kennissen te beperkt.			
g)	Ik heb veel mensen op wie ik volledig kan vertrouwen.			
h)	Er zijn voldoende mensen met wie ik me nauw verbonden voel.			
i)	Ik mis mensen om me heen.			
j)	Vaak voel ik me in de steek gelaten.			

**Bedankt voor het invullen van de vragenlijst!**