

Loneliness and Social Isolation in the time of Covid-19: Impact on Mental and Physical Health in Older Adults

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CONFLICTS OF INTEREST

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 - **National Institute of Health**
- **No financial relationship with the pharmaceutical industry**
- **Co-Investigator in the UCSD-IBM Center for Artificial Intelligence for Healthy Aging**

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OUTLINE

- **Behavioral Epidemic of Loneliness & Social Isolation**
- **Impact on Mental & Physical Health**
- **Interventions for Loneliness & Social Isolation**

The Behavioral Epidemic of Loneliness & Social Isolation

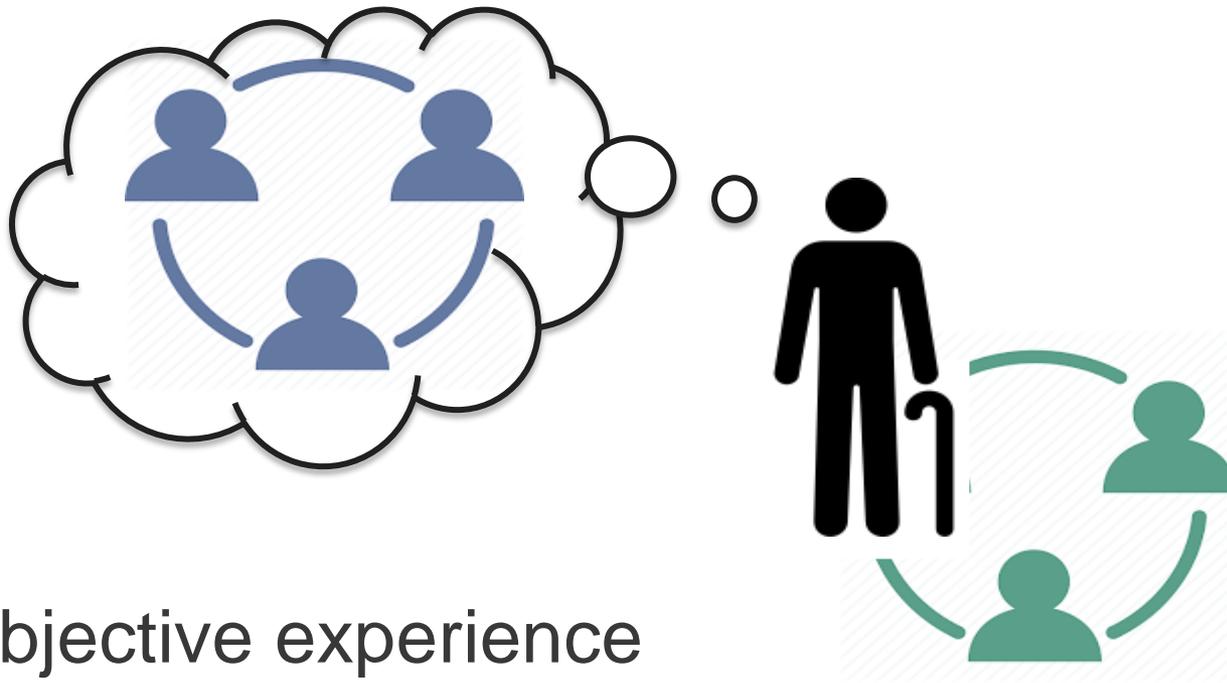
Social Isolation is the **objective** lack of social contacts



Social support includes:

Instrumental support
Emotional support

Loneliness is the **distress** from a discrepancy in **perceived** vs. **desired** relationships



- Subjective experience
- Self-report measures
- Trait vs. State

Risk factors for Social Isolation & Loneliness



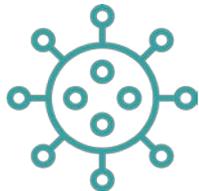
Living alone



Shrinking social networks



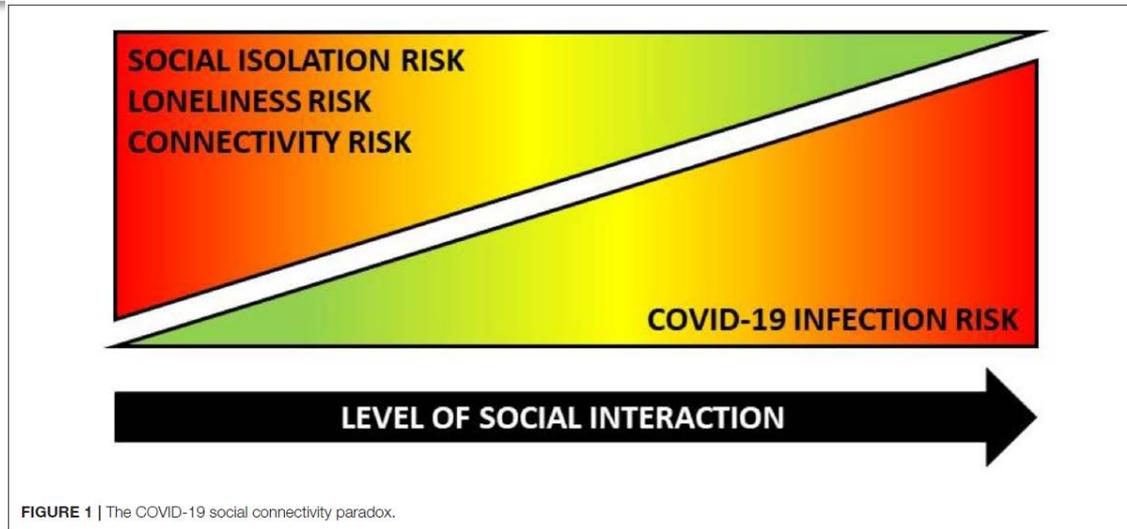
Aging



Physical distancing

(US Census Bureau 2011, Pew Research center 2009, Dahlberg 2015, Wrzus 2013)

Covid-19 Concerns



Connectivity paradox (Smith 2020)

Increased prevalence of loneliness

- 37% pre-pandemic to 51% among UK adults (Bu 2020)
- Increased among US 65+ year olds (Luchetti 2020)
- Higher depression and greater loneliness during shelter-in-place (Krendl 2020)

High Rates of Loneliness among Older Adults



Affects $\frac{2}{3}$ of older adults

Risk factors for Loneliness:

Older age
Female sex

Low education
Living alone/unmarried

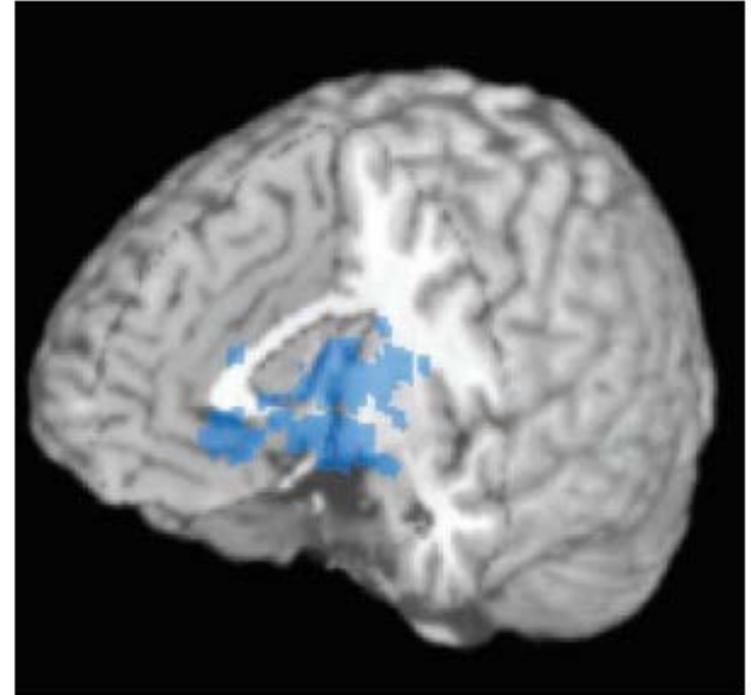
Loneliness is modestly heritable

- GWAS analyses in UK Biobank (N=452,302)
- Loneliness is a modestly (37%-55%) heritable trait with a highly polygenic architecture
 - Shared risk for cardiovascular, metabolic and psychiatric disorders



Neurobiological Changes in Loneliness

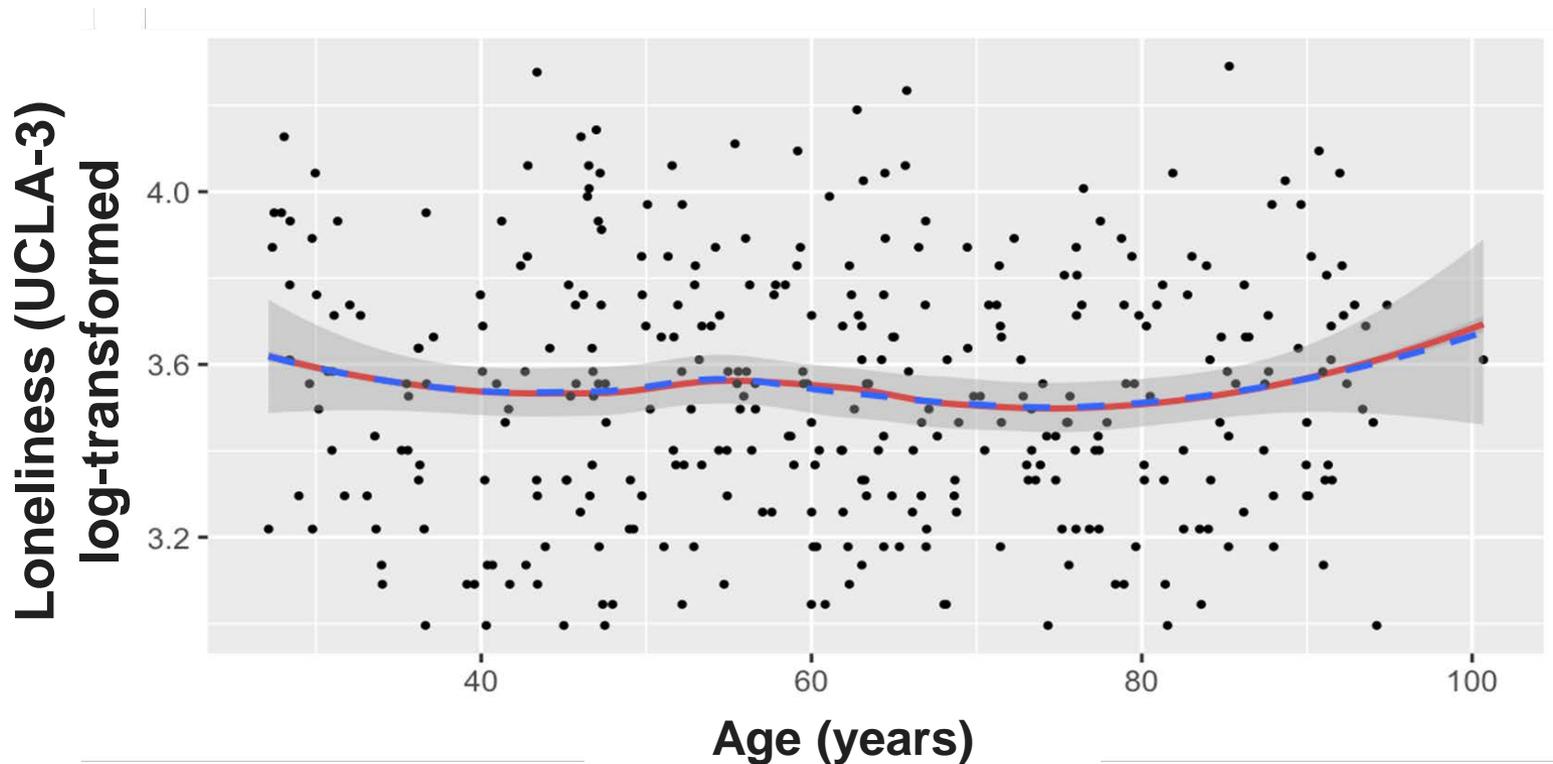
- Brain Regions
 - L posterior superior temporal sulcus
 - L dorsolateral prefrontal cortex, dorsomedial prefrontal cortex
 - Anterior insula, caudate
 - Amygdala
- Decreased density/volume
- Connectivity, Activation



Unrewarding. Lonely people take less enjoyment from social interactions and exhibit less activity (blue) in the ventral striatum.

Loneliness is linked to Aging

Higher loneliness levels in late-20s, mid-50s, and late-80s



The Experience of Loneliness for older adults

Risk factors

Age-related losses
Loss of family/friends
Loss of physical health
Lack of Social Skills
Inability to act

Well, as you get older, there's less and less people. You know, people die off around you, and a world of loneliness. And I suppose too, as you get older, it's harder to get around and see the people that you do know.

Experience of loneliness

Emptiness & Sadness
Lack of meaning & Hope
Helplessness

“Loneliness I think is feeling you are deep, deep, close to your own self and really when I feel lonely, I guess, it is because I'm all to myself at that moment, by myself, with myself, and with nobody else but myself.”

(Morlett Paredes, Lee, et al.
J of Aging and Mental Health, 2019)

Gender differences in Loneliness

Interviews with 80
older adults

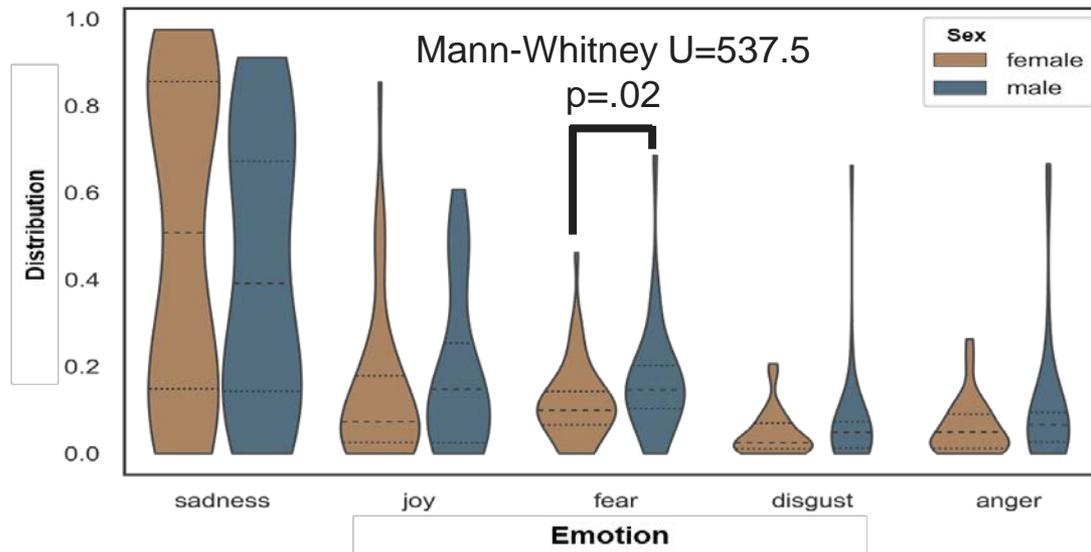
- 45% acknowledged feeling lonely
- 38% were lonely by the scale



Gender differences in reporting loneliness

Women were more likely to acknowledge feeling lonely in the interview than men.

Men express higher levels of fear in their responses than women



(Badal, et al. 2020. *Am J Geriatric Psychiatry*)

Impact on Health

Physical Toll of Loneliness and Social Isolation

Loneliness impacts health **more** than obesity,
more than smoking 15 cigarettes/day



Loneliness is associated with hypertension, motor decline, frailty, cardiovascular disease in older adults

Loneliness and social isolation **doubles** mortality risk among older adults

(Momtaz et al. 2012; Cacioppo et al., 2002; Valhorta et al., 2018;
Perissinotto et al., 2012; Buchman et al. 2010; Herrera-Badilla et al., 2015;
Holt-Lunstad et al.)

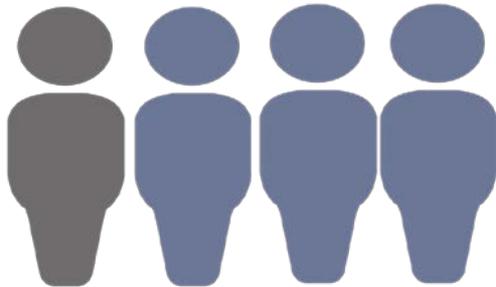
Loneliness and Health

Study sample

340 individuals

Mean age 62 ± 18 yrs (27 – 101 yrs)

50% Women



76% had **moderate-high** levels of loneliness

Dose-dependent association with **worse** physical, mental, and cognitive health

Loneliness and Social Isolation are linked to Poor health behaviors

Loneliness is an independent predictor of:

- Smoking
- Alcohol consumption
- Sedentary behaviors
- Malnutrition



Loneliness is associated with sleep problems

- Decreased sleep efficiency
- Increased overnight awakenings (WASO)
- Longer sleep latency
- Worse sleep quality
- Insomnia

(Crewdson et al., 2016; Brown & Chiang, 1983; Ferry et al., 2005; Netz et al., 2013; Cacioppo et al., 2008, Cacioppo et al., 2002, Hawkey et al., 2007; Hom et al., 2017; Kurina et al., 2011)

Loneliness affects our Immune function and Stress reactivity

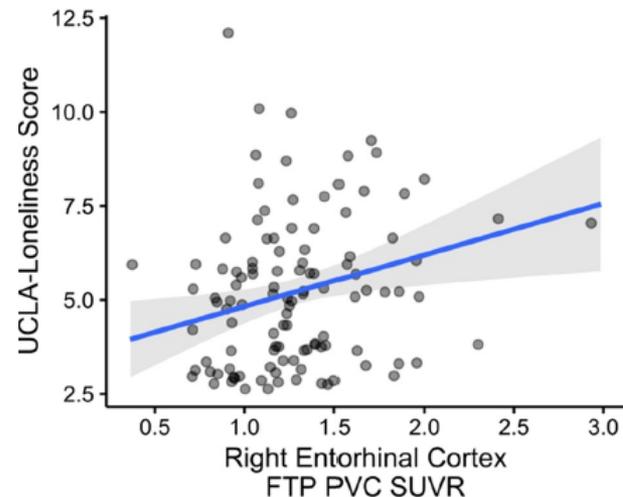
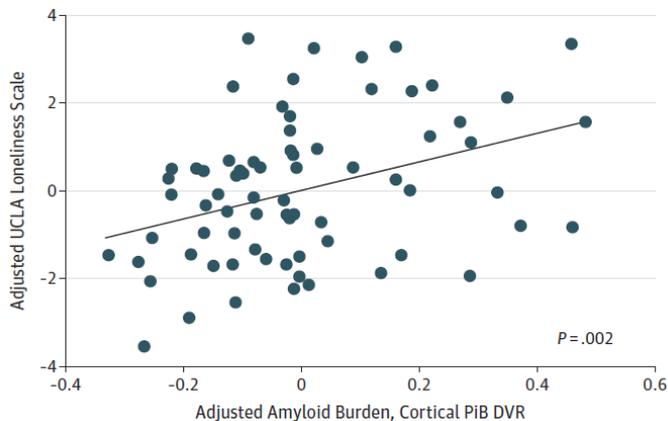
- **Loneliness is linked to dysregulated inflammation**
 - Increased levels of IL-6 and IL-1Ra in response to psychological stress in women
 - Lower levels of natural killer cells, poorer T-lymphocyte response to PHA, poorer antibody response to flu vaccine
 - Increased C-Reactive Protein levels, plasma fibrinogen, ferritin
- **Loneliness is related to blunted cortisol responsivity**



(Hackett et al., 2012; Balter et al., 2019; Pavela et al., 2018; Vingeliene et al., 2019)

Loneliness and Social Isolation are associated with cognitive decline

- Loneliness and social isolation are independent predictors of cognitive decline, development of mild cognitive impairment, and Alzheimer's disease (OR/HR/RR 1.2-3.0).
- Lonely older adults with normal cognition are more likely to have higher amyloid and tau burden

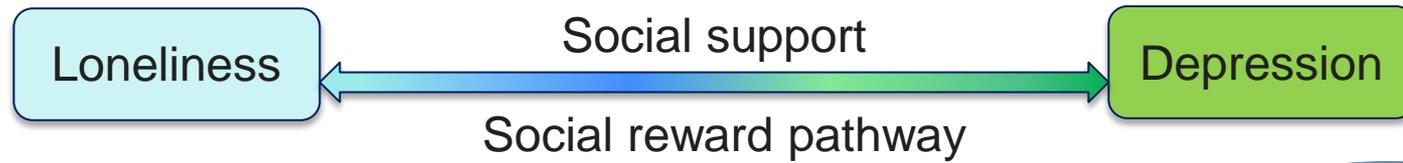


(Donovan et al., JAMA Psychiatry, 2016; Uquillas et al., Translational Psychiatry 2019)

Loneliness and Social Isolation are linked to depression and anxiety

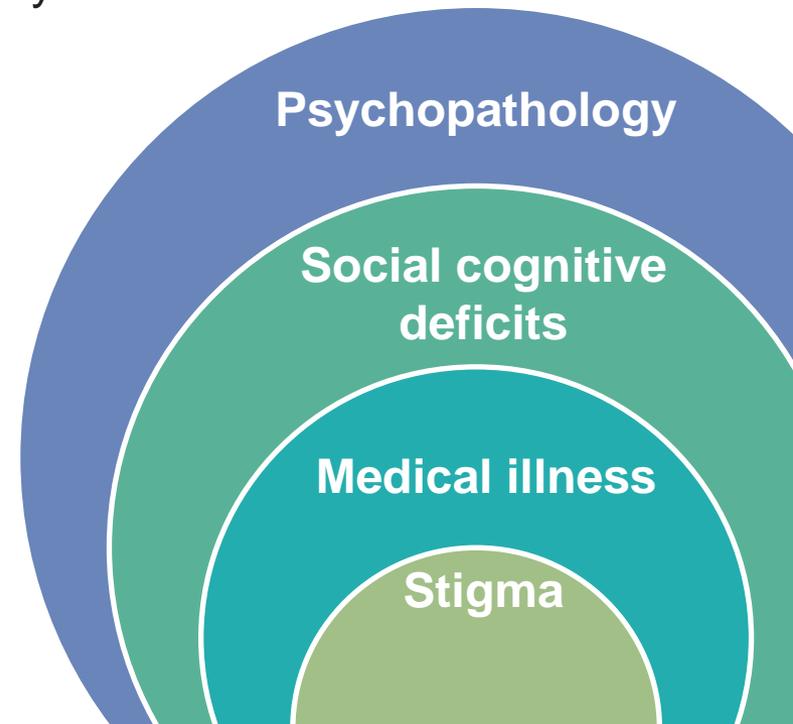
Loneliness has a bidirectional relationship with depression and anxiety

but they are distinct



- **Increased loneliness and social isolation in persons with serious mental illnesses**

(Jeste, Lee & Cacioppo JAMA Psychiatry, 2020;
Lee et al. International Psychogeriatrics, 2019)



Interventions for Loneliness and Social Isolation

The Experience of Loneliness for Older adults



Based on interviews with 30 older adults



Coping Strategies

Oneliness
Acceptance of Aging
Compassion
Spirituality
Seeking companionship
Environment that enables socialization

Loneliness and Social Isolation Interventions

Main intervention types:

- Addressing maladaptive social cognitions
- Improving social skills
- Enhancing social supports
 - Internet-based communications
 - Social robots
- Increasing opportunities for social contacts
 - Online support groups



Loneliness and Social Isolation Interventions

Limitations

- **High heterogeneity of**
 - **Intervention types**
 - **Loneliness assessments**
 - **Cohorts**
 - **Control for demographic, related factors (familiarity with technology, depression, etc.)**
- **Mixed results**

Cognitive Behavioral Therapy for Loneliness

3-month App-based CBT in 32 older adults (Jarvis 2019)

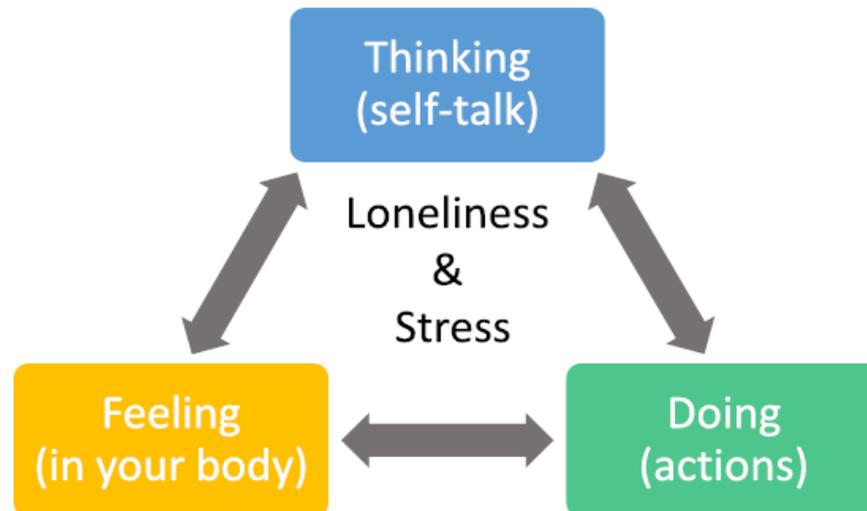
- Focused on maladaptive social cognitions
- Significant reduction of total and emotional loneliness

12-week group CBT for 62 older adults with depression and anxiety (Smith 2020)

- Psychoeducation, cognitive restructuring, behavioral activation, problem solving, graded exposure therapy, assertiveness training, sleep strategies, bereavement/loss, relapse prevention
- Decrease in loneliness ($d=-.65$)

Cognitive-Behavioral Model of Social Isolation

FIGURE 1. A cognitive-behavioral model of social isolation.



Personalized Social Connections plan

Ways I can change my perception:

1. My neighbors have not forgotten about me
2. _____

Ways I can change how my body feels:

1. Deep breathing
2. _____

Ways I can connect:

1. Set up weekly calls with friends
2. _____

Tech-based solutions for older adults

Internet-based video communications

- **Mixed efficacy for loneliness when connecting with family and friends** (Tsai 2011, Mahoney 2003, Torp 2006, Savolainen 2008, Hulsboch 2017)

Online support groups

- **Helpful especially if geared for specific cohort (people with diabetes, heart transplant recipients, caregivers, women-to-women peer groups)** (Barrera 2002, Dew 2004, Hill 2006)

Web-based self-help programs

- **Somewhat helpful depending on usage/engagement** (Bond 2010, Chiu 2009, Annemieke 2008, Samoocha 2011, Gustafson 2005, Lieberman 2005, Pierce 2009)

Tech-based solutions for older adults



Social robots

- **Possibly helpful.**
- **Could replace pet therapy with actual pets, could be useful for patients with dementia** (Banks 2008, Robinson 2013)

Computer training

- **Sometimes helpful, but really depends on motivation, person preferences**
- **Helpful especially when delivered by peers** (Fokkema 2007, Slegers 2008, Shapira 2007, White 2002, Billipp 2001)

Future Directions

- **Objective and remote assessments of Loneliness**
- **Loneliness in serious mental illness**
- **Remote loneliness interventions during Covid-19 pandemic**



UC San Diego
SCHOOL OF MEDICINE

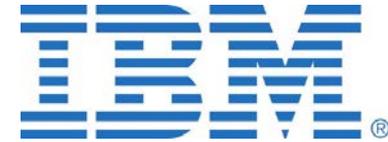
VA San Diego
HEALTHCARE SYSTEM

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Center for Healthy Aging



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BRAIN & BEHAVIOR
RESEARCH FOUNDATION
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Thank you!

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