BRIEF REPORT

Let there be light: The moderating role of positive solitude in the relationship between loneliness and depressive symptoms

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ABSTRACT

Positive solitude (PS), the choice of being alone to engage in meaningful inner or physical, spiritual, mental, or cognitive activity/ experience, was recently suggested as a stand-alone phenomenon differentiated from loneliness and negative solitude. As loneliness was previously found to have adverse implications for mental health, the present study examined whether the ability to engage in PS can moderate the harmful effect of loneliness on depressive symptoms. The sample consisted of 520 community-dwelling older adults in Israel aged 68–87 (Mage = 72.66). Participants answered an online questionnaire through a survey company (Ipanel) assessing their background characteristics, depressive symptoms, loneliness, and PS. Loneliness was positively associated with depressive symptoms, whereas PS was negatively associated with depressive symptoms. Furthermore, PS moderated the relationship between loneliness and depressive symptoms, such that higher levels of PS weakened this association. The findings indicate that PS may serve as a buffering factor for mental health among older adults by augmenting coping with the adverse outcomes of loneliness. The results provide insight for tailoring future treatment interventions focusing on PS to enhance mental health among older adults.

Key words: Positive solitude, Loneliness, Depressive symptoms, Older adults

Introduction

Loneliness, solitude, and positive solitude

Loneliness is the distressing feeling of a perceived gap between desired and obtained social relationships. It has detrimental effects on various aspects of health, including mental health, sleep quality, cognitive impairment, early mortality, and depression (Park *et al.*, 2020). This paper focuses on depression, as loneliness is commonly experienced among older adults and is a significant precursor to depression.

While loneliness and solitude are sometimes used interchangeably, they have distinct meanings. Loneliness is a negative experience associated with adverse effects on health and well-being, while solitude can be either positive or negative. Negative solitude encompasses situations such as social isolation, social withdrawal, or ostracism. In contrast, solitude, as differentiated from loneliness, reflects an inherent desire to be alone (Hipson *et al.*, 2021). Recent research comparing the emotional content of tweets containing the words "solitude" and "lonely/loneliness" revealed a more optimistic and favorable context for solitude. Consequently, positive solitude (PS) is viewed as a separate phenomenon, not the opposite of loneliness, but rather a different interpretation and response to being alone (Tse *et al.*, 2022). PS is defined as the voluntary choice to be alone, with or without the presence of others, engaging in meaningful activities (Ost-Mor *et al.*, 2020). It contributes to emotional regulation and cognitive executive functions, such as decision making and mindfulness (Thomas, 2021). Gender differences in PS are minimal, with slight age-related variations indicating a slight decrease in PS among older adults.

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Table 1. Descriptive statistics for the study variables

	M/ %	SD	RANGE	1	2	3	4	5	6	7
1. Depressive symptoms	4.69	4.49	0-24	–						
2. Loneliness	15.67	4.70	8-32	0.53***	–					
3. Positive solitude	3.65	0.73	9-45	− 0.20***	− 0.18***	–				
4. Age	72.66	3.75	68-87	− 0.00	0.02	− 0.03	–			
5. Gender[a]	48.8%	–	1-2	0.15**	0.06	− 0.02	− 0.19***	–		
6. Marital status[b]	79.2 %	–	1-2	− 0.17***	− 0.12**	− 0.04	0.04	− 0.24***	–	
7. Education[c]	4.43	1.24	1-6	− 0.06	0.07	0.04	0.01	0.01	0.03	–

Note. Total $N = 520$. [a]= woman. [b]= currently married or living with a partner. [c]= ranging on a scale from 1 = no formal education to 6 = high academic education. The correlations for Educations were measured with Spearman's ρ coefficient.

*$p < 0.05$, **$p < 0.01$, ***$p < .001$.

The question arises whether loneliness and PS are opposing forces or can coexist. Daily life involves a range of experiences that influence mood, social interactions, emotional changes, and voluntary and involuntary solitude. Loneliness depletes psychological and physical resources, leaving no room for enjoying PS. However, PS can serve as a resource to counteract loneliness by fostering inner strengths. It can also moderate depressive symptoms and facilitate the return to routine life after crisis (Keisari *et al.*, 2022). In the context of older adults, PS is assumed to moderate the association between loneliness and depression. Spending time alone can lead to depression, but engaging in meaningful activities can alleviate distress. PS allows introspection, enjoyment, and mood regulation. During the COVID-19 pandemic, older adults who engaged in PS activities felt resilient and well despite social isolation. Hence, the significance of PS for older adults, especially those at risk of depression due to loneliness, is evident (Segel-Karpas *et al.*, 2018).

The present study

Previous studies have shown the strong relationship between loneliness and depressive symptoms, focused on strategies to manage loneliness (Kharicha *et al.*, 2018) or on the moderating role of PS in the context of depressive symptoms (Keisari *et al.*, 2022). However, to the best of our knowledge, this is the first study to examine the relationship between loneliness and PS with depressive symptoms. The research adds to current discussion about the ability to use PS to cope with difficulties and may enhance practitioners' ability to craft interventions to combat loneliness.

We hypothesized that higher levels of loneliness will be associated with higher level of depressive symptoms (H1), and that higher level of PS will be related to lower level of depressive symptoms (H2). Finally, PS will moderate the association between loneliness and depressive symptoms, specifically having higher levels of PS will weaken the association between loneliness and depressive symptoms (H3).

Methods

Participants and procedure

The study used random sample (yet not representative) from an online survey company (*Ipanel*) in Israel, collected in May 2022. All participants from the survey company dataset who were in the adequate age could participate in the study. Participants included 577 older adults aged 67 or above. After omitting those who did not fill the relevant scales for this study, the sample included 520 participants aged 68–87 ($M_{age} = 72.66$), almost half of them women ($n = 254$; 48.8%), most were married ($n = 412$; 79.2%), and with high education ($n = 420$, 80.8% with more than 12 years of education). Data collection commenced after receiving IRB approval from the Ethics Committee of the last author's university. All participants signed an informed consent form before completing the questionnaire. Demographics of the study are presented in Table 1.

Measures

Background characteristics included age, gender (although to the best of our knowledge, no major differences between men and women regarding PS experiences were found in a qualitative study), marital status (1= married or living with a partner, 2 = single, divorced, or widowed), and education, measured on a scale ranging from 1 (*no formal education*) to 6 (*high academic education*).

Depressive symptoms were measured using the 9-items scale (PHQ-9, Kroenke & Spitzer, 2002). Participants rated how often they felt depressive symptoms in the last month, on a four-point Likert scale from 1 (*not at all*) to 4 (*nearly every day*). For example, "Over the *last 2 weeks*, how often have you been bothered by any of the following problems?

Feeling down, depressed or hopeless." Scores were computed by summing the items, and ranged from 0 to 28, with higher scores reflecting higher levels of depressive symptoms. Cronbach's α in the current study was 0.852.

Loneliness was measured with the short version of the Revised UCLA loneliness scale (UCLA-8) (Hays and DiMatteo, 1987). This scale includes 8 items that measure the participants' level of discrepancy between their expectation and their actual social relationships, on a scale ranging from 1 (*never*) to 4 (*very often*). For example, "I lack companionship." Scores were computed by the sum of the item scores, with higher scores indicating greater loneliness. Cronbach's α in the current study was 0.806.

PS was measured with the Positive Solitude Scale (Palgi *et al.*, 2021). This scale includes 9 items that assess to what degree participants report that they have beneficial experiences when they volitionally choose to be by themselves, such as: "I like carving out time to enjoy being by myself in a pleasant place/ environment," on a 5-point Likert scale, ranging from 1 (*strongly disagree*) to 5 (*completely agree*). Score was computed by the mean of scores, with higher scores reflecting higher PS. Cronbach's α in the current study was 0.910.

Data analysis

All predictors were mean centered before the analyses and background characteristics were controlled for. Using multiple hierarchical linear regression, depressive symptoms were regressed according to the hypothesis. Demographics were entered in the first step (age, gender, marital status, and education). Loneliness and PS were entered in the second step, and finally, the interaction between loneliness and PS was added in the third step. The interaction term was probed with the PROCESS computational tool (Model 1) in order to test the significance of simple slopes at two different levels (-1 and $+1$ SD) from the mean of PS.

Results

Table 1 presents means, standard deviations, and correlations for all study variables. Loneliness was positively correlated with depressive symptoms $r = 0.53$, $p<0.001$ and negatively correlated with PS $r = -0.18$, $p<0.001$. PS was negatively correlated with depressive symptoms $r = -0.20$, $p<0.001$.

Following our main hypothesis, we entered the demographic variables in Step 1 (age, gender, marital status, and education) accounting for 4.7% of the variance in depressive symptoms.

Next, in Step 2, we examined the main effects of loneliness and PS, accounting for an additional 27.8% of the variance. Loneliness and PS were both associated with depressive symptom ($\beta = 0.50$, $t[520] = 13.42$, $p < 0.001$; $\beta = -0.11$, $t[520] = -2.89$, $p < 0.01$, respectively).

In Step 3, we entered the interaction between loneliness and PS. The interaction was significantly associated with depressive symptoms ($B = -0.13$, $\beta = -0.12$ $t[520] = -3.36$, $p < 0.001$). Simple slopes analysis suggested the association between loneliness and depressive symptoms is stronger among those with lower levels of PS. For participants who reported -1 SD level of PS, each additional loneliness score was associated with a significant increase of 0.55 points in depressive symptoms, ($B = 0.55$, $t[520] = 13.36$, $p < 0.000$), comparing to 0.36 points ($B = 0.36$, $t[520] = 7.29$, $p < 0.000$) among participants who reported $+1$ SD level of PS. The interaction accounted for an additional 1.5% of the variance. For further information, see Figure 1.

Finally, as this study is cross-sectional we also ran the interaction with the same variables when PS is the dependent variable and depressive symptoms is the moderator. The association remained significant ($B = -0.005$, $t[520] = -3.43$, $p < 0.001$) suggesting that it is possible that these relations might be bidirectional.

Discussion

This study examined the relationship between loneliness and PS with depressive symptoms in older adults residing in the community. Specifically, the study is the first to examine the interaction between loneliness, PS, and their impact on depressive symptoms in this population.

Consistent with the first and second hypotheses, we found a positive association between loneliness and depressive symptoms, and a negative association between PS and depressive symptoms. These results align with previous research demonstrating a moderate to strong positive correlation between loneliness and depressive symptoms.

While the negative association between PS and depressive symptoms may seem intuitive, empirical studies on this topic are limited. The present study suggests that several factors contribute to this negative association. Firstly, PS is characterized by nourishment and joy, whereas depressive symptoms impose inner boundaries and deplete one's mental and cognitive resources (Perini *et al.*, 2019). Secondly, PS requires specific skills that may be adversely affected by depression, and individuals experiencing depressive symptoms may lack the emotional and
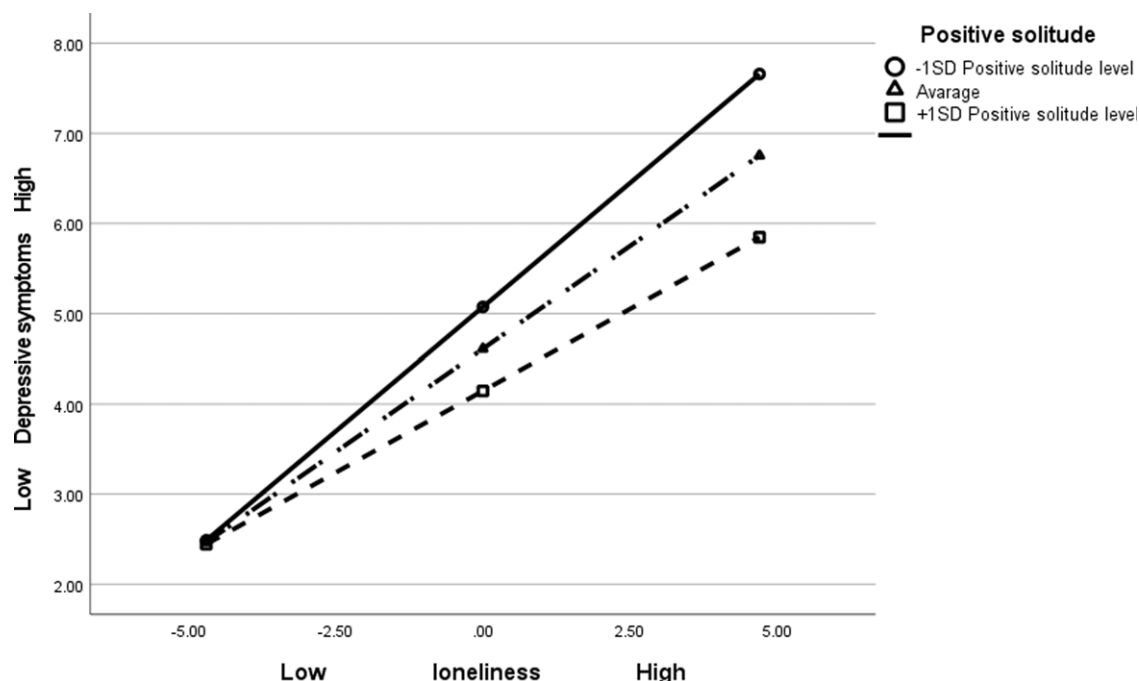
Figure 1. The moderating role of positive solitude in the association between loneliness and depressive symptoms.

cognitive resources necessary to engage in PS. Consequently, the absence of PS skills (such as finding emotional regulation or heeding to signals to enter a state of PS) and experiences can lead to feelings of loneliness and the emergence of depressive symptoms. These findings were supported by the significant results obtained when analyzing the interaction between PS and depressive symptoms in both directions. Further research is warranted to explore the longitudinal and causal relationships between PS and depressive symptoms. Regarding the third hypothesis, the findings indicated that PS moderated the relationship between loneliness and depressive symptoms. High levels of loneliness were positively associated with elevated levels of depressive symptoms, but the strength of this relationship diminished when PS levels were high. This suggests that engaging in PS may potentially mitigate some of the detrimental consequences of loneliness. Furthermore, PS may contribute to lower levels of depression by serving as an internal resource that fosters self-connectedness, awareness, flexibility, and creativity.

This study's innovation lies in recognizing that older adults can utilize PS as an inner resource to navigate the challenges of loneliness and subsequent depressive symptoms. Promoting the cultivation of these inner resources and encouraging engagement in PS may transform the approach to combating loneliness in older adults. Additionally, incorporating PS skills training into national health promotion programs for older adults could enhance resilience. We recommend implementing PS skill development programs through group meetings that aim to

understand the concept of PS, by recognizing and negotiating for the need for alone time and emphasizing the significance of exercising at home.

Despite its significance, this study has several noteworthy limitations that should be addressed. Firstly, its cross-sectional design precludes causal inferences, and it remains unclear whether PS predicts depressive symptoms or vice versa. Secondly, the majority of participants (79.2%) were married, potentially introducing bias. However, even in committed relationships, individuals may still experience some degree of loneliness, albeit to a lesser extent than unmarried individuals. Lastly, the sample consisted mostly of educated individuals, which may introduce bias as education acts as a protective factor against loneliness. Additionally, online data collection may have further biased the sample by recruiting more technologically oriented and socially connected older adults. However, this suggests that in a more representative sample, loneliness levels may be higher, thereby rendering the moderating effect of PS more meaningful.

Further research focusing on loneliness, depressive symptoms, and the moderating role of PS is warranted, particularly in diverse populations such as home-dwelling older adults and nursing facility residents. In conclusion, this study expands our understanding of the complex relationships between loneliness, depressive symptoms, and PS, highlighting the importance of considering the interaction between loneliness and PS. PS serves as a valuable capability for coping with the psychological implications of loneliness.

Conflict of interest

None.

Description of authors' roles

Menachem Ben-Ezra, Yaira Hamama-Raz, Shacham Maayan, Dikla Segel-Karpas, Yuval Palgi, and Sharon Ost-Mor: Formulated the research questions and designed the study.

Lee Greenblatt Kimron and Dikla Segel-Karpas: Carried it out and supervised the data collection.

Yuval Palgi: Supervised data collections and analyzed the data.

Sharon Ost-Mor: Wrote the paper.

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