



Trust Some *Body*. Loneliness is Associated with Altered Interoceptive Sensibility



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Introduction

Loneliness—*perceived* social isolation—is a common but complex state and sometimes, degradative trait. Due to the inherent nutritive value of social connection, chronic loneliness carries significant mortality risk (7). It is associated with higher levels of depression (6), and lower self esteem, gratitude (3), and subjective well-being (SWB; 9). However, its association with a key formative aspect of emotional processing, interoception—the sense of the physiological condition of the body—has yet to be reported. Dysregulation of interoception has been recently reported in a host of clinical conditions, and higher levels have been associated with better emotional and social functioning. Thus, it is possible that loneliness is associated with altered interoception. This association may also involve alexithymia—relative difficulty in identifying one’s own emotions. In 4 population-based surveys we examine the relationship between self-reported loneliness and interoceptive sensibility, amongst other known related constructs.

Method

We conducted large online surveys on undergraduate students.

Loneliness: UCLA Loneliness scale (Version 3; Russell, 1996)

20 items: “How often do you feel isolated?” [Never/Rarely/Sometimes/Always]

Interoceptive Sensibility (IS): MAIA scales (Mehling et al., 2012)

32 items: “I trust my body sensations.” [Never/-/-/-/Always; 0-5 Average score]

8 subscales: Noticing, Not Distracting, Not Worrying, Attention Regulation, Emotional Awareness, Self Regulation, Body Listening, Body Trusting

Survey Composition | Mean (SD) | Measures for Other Constructs of Interest

Sample	n	Loneliness	Depression	SWB	Self Esteem	Alexithymia
1	227	44.0 (9.4)				-
2	300	46.0 (9.3)				-
3	358	46.3 (9.2)	CESD scale	SWLS scale	RSE scale	-
4	679	46.8 (10.3)	DAS scale	7 point scale	7 point scale	TA scale

Listed are the size of samples and descriptive statistics for loneliness, as well as differential measures of predictors of interest across Samples 3 & 4.

Results

Loneliness and Interoceptive Sensibility

We first conducted exploratory analysis on datasets from a separate study, in Samples 1 & 2. We present zero-order correlations with Loneliness and IS scales.

As shown here, significant correlations were found between loneliness and scales of IS. **Body Trusting** was the most strongly associated with loneliness. Below are the specific items of this subscale.

- 30. I am at home in my body.
- 31. I feel my body is a safe place.
- 32. I trust my body sensations.

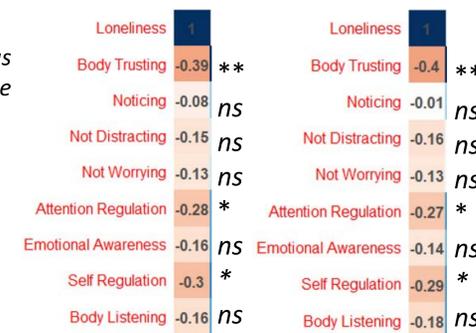


Figure 1. Zero order correlations of loneliness and IS scales. Sample 1 results are shown on the left, Sample 2 results on the right. *p < 0.05; **p < 0.01.

Multiple Regression in Samples 3 & 4

Next, we conducted multiple regression analysis using loneliness as the DV and the predictors listed below. Besides Alexithymia, all of these associations have been previously reported.

Predictors were added stepwise to create the full models below. Anxiety, stress, and gender were not significant predictor variables, and thus left out of final models. Standardized regression coefficients are reported, with associated p values, and adjusted r² for the full model.

Body Trusting remains a significant predictor of loneliness, even when accounting for other subscales of IS that are correlated with loneliness: attention regulation & self regulation.

Sample 3	β	p	(a)r ²
Depression	0.16	0.001	0.462
SWB	-0.01	ns	0.462
Self Esteem	0.24	< 0.001	0.462
Gratitude	-0.25	< 0.001	0.462
Trusting	-0.16	< 0.001	0.462

Sample 4	β	p	(a)r ²
Depression	0.24	< 0.001	0.558
SWB	-0.19	< 0.001	0.558
Self Esteem	-0.09	0.003	0.558
Gratitude	-0.16	< 0.001	0.558
Alexithymia	0.14	< 0.001	0.558
Trusting	-0.18	< 0.001	0.558

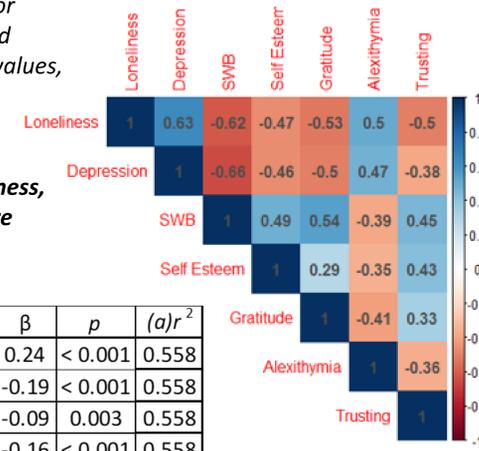


Figure 2. Zero order correlations of constructs in Sample 4.

Discussion

Here we report the first known associations between loneliness and interoceptive sensibility (IS). After accounting for other correlates of loneliness as well as associated subscales from our measure of IS, **Body Trusting predicted significance variance in loneliness.** Alexithymia may be a result of interoceptive dysfunction, and was also identified as a significant predictor of loneliness in Sample 4. Associations with depression, subjective well being, and self esteem were replicated. The association between loneliness and interoception deserves more empirical attention, due to the capacity of the latter to facilitate emotional identification and regulation. In particular, other measures of interoception (5) — such as objective interoceptive accuracy (e.g., heartbeat detection) and metacognitive interoceptive awareness should be assessed with regard to loneliness.

Interestingly, particularly successful attempts at loneliness reduction have used mindfulness-based stress reduction (4), which includes aspects of meditation that may train interoception, as a candidate mediating mechanism of loneliness reductions. Low body trusting, specifically, has recently been shown to predict suicidal ideation and attempts (8) as well as eating disorder severity (1). Thus, this *relational* mechanism to core constituents of emotional information (bodily signals) may contribute to social disengagement and social mistrust in lonely individuals, maintaining the condition through misevaluation of social connection.

Citations

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