

Science AMA Series: We are Angie LeRoy and Dr. Christopher Fagundes, from Rice University in Houston, TX, we research the connections between loneliness and the common cold, AMA!

Lonely_Colds¹andr/ScienceAMAs¹

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Was it possible to maintain blinding in this study? It seems odd to use a self-reported scale while also priming the subject with a questionnaire about loneliness and then locking them in a room for a week to be lonely. Couldn't the results be biased from the subjects being aware that it's a study on illness and loneliness?

Edit: thanks for the responses :D

[Talkahuano](#)

Great question! I think HerbziKal's response below sums it up nicely but I have also expanded on theirs. Please see my reply below.

Do you believe that this is purely a psychological factor or is there basis for belief that there is some neurological component (i.e., perhaps more depressed participants were the ones to suffer from symptoms that were actually worse, as opposed to simply perceiving the symptoms as worse)?

Also, did their symptoms last for a longer period of time, or did the illnesses stick around for roughly the same time regardless of the experimental group?

[NuclearCherry](#)

worse)? Also, did their symptoms last for a longer period of time, or did the illnesses stick around for roughly the same time regardless of the experimental group?

Great thoughts. We aren't sure what is driving this effect in terms of a specific mechanism at this point. However, we can rule out to some extent that the effects of depression were what was driving the effects we report in the paper because we did statistically control for depression. Also, individuals with severe mental health issues were excluded from the study. Although I will say that I'd like to see this study replicated using an even better measure of depression than we did.

Did you collect baseline blood samples from the subjects? I'm curious if those that reported higher baseline loneliness also had higher pro-inflammatory cytokines/acute phase proteins. And was their cytokine response more or less severe than those with low or average loneliness ratings? Could cytokines mediate the severity of the symptoms predicted by loneliness.

[captglasspac](#)

Hi! Such an awesome question, because we are suspecting that a heightened systemic inflammatory response among those who are lonely may be one possible mechanism driving this effect but unfortunately we could not test that hypothesis in the current study. Some blood samples were collected as part of this study but not serum level cytokines. However, we do have data on inflammation at the site of the infection (where the nasal spray was given up the nose) but we honestly weren't sure how we would interpret that data if we found significant results so we did not test any hypotheses using this data. Inflammation at the site of infection could be seen as adaptive since this is likely reflective of fighting off the cold, but there is not extensive literature on this type of thing in terms of it's relationship with psychosocial factors or cold symptoms (at least in our field) so we did not feel we had a sound theoretical rationale to test any hypotheses. If you do though, we'd love to hear it!

Is loneliness simply another type of stress then?

[justinsayin](#)

In our field of Health Psychology, loneliness would be considered a psychosocial stressor (which is some combination of a psychological and social factor that may impact stress). So short answer, YES!

Sorry for asking a question that's extremely tangential to the results of the study. But... What did your subjects do all day to survive for 5 days isolated in a hotel room?????

[lucaxx85](#)

lol, that data was not strategically collected, but I would imagine they enjoyed their television, comfortable bedding, and meal service 3 times per day that was provided :)

Where does age come into this? Older people are generally exposed to colds because of their weakened immune system. Also, many older people who don't have close family members or live far away from their kids would make them more susceptible to loneliness than other age groups.

I think a lot of additional factors would affect the correlation between loneliness and the common cold, but I still think it is an interesting topic to research. Thanks for doing this AMA.

[treytakzona](#)

You are absolutely correct. Older individuals are more prone to loneliness. However, age and loneliness was not significantly correlated in this study but that may partially be due to less variation in the age of our participants. I would really like to see what would happen using an older sample. In terms of whether age may affect the results, we statistically controlled for age in our model so we can conclude that loneliness predicted the severity of cold symptoms above and beyond and effects of age.

What was your experience with omitted variable bias in this study? Doesn't seem to be a causal relationship.

[LastNightNBA](#)

omitted variable bias

I know this isn't directly answering your question, but we do look at things that may contribute to omitted variable bias. For example, we controlled for variables that are theoretically (or empirically as illustrated by the data in our study and/or previous related studies) related to the dependent variable. In addition, we are careful to avoid multicollinearity within the multiple independent variables entered into the model.

Could your findings be used to help doctors find some kind of treatment that might help patients?

Interesting study!

[dolphinesque](#)

How to treat loneliness is a great question but it's a tough one to answer because it's so heavily based on perception. So, for example, there are many interventions in the medical and health psychology field designed to help patients expand their social network or seek social support. And those things can be helpful in some ways, but an individual can have a large social network and still feel lonely so it really comes down to whether those interventions help those patients feel like the quality of their relationships improve.

I'm a first year dental student (former hospital employee), and I'm studying for an immunology exam right now. The intricacies of this field are fascinating! I apologize for my many questions, feel free to answer one or two or none, I appreciate your time.

To go down a cosmic and somewhat philosophical path for a moment, do you expect that other microbes besides RV39 to be 'emotional opportunists?' That is, do you think infectious agents prey on individuals who present with lower [insert happiness metric]? Do you think that social connection to each other drives some form of herd protection? If so, it would be interesting to factor in the effects of social media (being 2017 and all), and whether that elicits true protection against loneliness and subsequent infection.

Thank you again for your time, Will

[fratking](#)

Really great thought, Will. *Please know I am answering this as a psychologist, not an immunologist (just in case I totally oversimplify something). In our field, the need to belong is considered a fundamental human need, whereas in other fields it's not regarded as being as important. Your thought about whether social connection to each other drives some form of herd protection was particularly striking to me. Research has demonstrated time and again that social stressors can negatively impact immunity but positive social connections can also buffer against negative health effects so it likely goes both ways. In terms of other strains of the virus (or other microbes) being "emotional Opportunists" (I love your description of this by the way), I definitely think that this effect would be present in an array of illness contexts. In fact, loneliness has been shown to have an impact on how cancer patients (among others) perceive their physical symptoms, so I wouldn't be surprised if we saw this effect in other illness samples as well.

Participants [...] were exposed to the common cold virus.

How is that ethically okay? What if the cold virus exacerbated some currently unknown medical condition in one of your subjects? I know people who had a cold with a cough and the cough persisted years afterward. What of the ethics of that possible problem? And is subjecting your patients to five or more days for such a minor conclusion really worth the effort?

[desantoos](#)

This study was considered ethically okay (and was deemed so by multiple ethics boards before it was conducted) because participants are not exposed to risks that they would not already be exposed to in everyday life (we are all exposed to viruses every day). There was also no guarantee they would actually get infected with the virus after exposure. Participants were compensated well (over \$1000) for participating, and participation was completely voluntary. Of course, exposing people to a virus that could make them ill is obviously not ideal, but it is considered one of the most minor and safe illnesses to use for this type of research. I should also say that the original study this data was drawn from was looking at a huge variety of variables, not just loneliness-- so it wasn't all ONLY in the name of loneliness...I could see how that may seem ridiculous. Participants also had to have been deemed healthy by a wide array of strict criterion to be accepted into the study. Here's some more information about ethical considerations: <http://www.cmu.edu/common-cold-project/human-subjects/index.html>

You asked them to self-report their perceived symptoms. Did you control for the possibility that lonely people might tend to exaggerate their symptoms? Perhaps this self-reporting was one of the few opportunities for them to reveal their feelings and that influenced how they responded. Whereas someone with a very active social life has many other outlets.

[dopkick](#)

That's a great thought. We tried to capture elements of this question by controlling for neuroticism (basically, emotional instability) which has been linked to a tendency to overreport physical symptoms. Even when we controlled for neuroticism in our statistical model, we still found this effect of loneliness.

Are there aren't cytokines/chemokines that have strong correlaries to your research? I'm curious about the psychoneuroimmunologic connection.

[where-are-my-pants](#)

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