

Isolation and you: The differential effects of isolation on extroverts and introverts

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ABSTRACT

The impact isolation has on an individual is well-documented, though it is unclear whether this impact is different depending on whether the individual is an introvert or an extrovert. The present study hopes to explore what relationship, if any, individual differences have with the effects of isolation. The methods included a voluntary online survey, in which participants answered questions to determine their level of extroversion, as well as to measure their present level of stress. They were then asked to sit in a room by themselves for five minutes, after which they took the stress test again. Analysis demonstrated no significant differences in level of stress between extroverts and introverts before and after isolation. However, there was a trend that illustrated participants may experience a lower level of stress after isolation, regardless of their personality differences. There also may be a trend for people deemed as 'quiet' to experience a dip in confidence in their ability to handle personal problems after the period of isolation. Potential confounds include discrepancies between participants' environments during isolation (i.e., they may have been able to hear people in other rooms, therefore introducing a form of social participation). Real-world implications of the study include the ability for people to plan how to alleviate stress produced by social isolation, depending on their own level of extroversion. In future studies, we may add Neuroticism as a scale to determine if one potential explanation for the dip in confidence may be due to overthinking while alone. We may also use more previously validated questionnaires instead of adding original items.

INTRODUCTION

Prolonged isolation has a detrimental effect on the human brain. Isolation is defined as being by oneself, without the aid of social media to mitigate the effects. Though this is well-known, it is still undefined whether isolation affects those who enjoy being alone differently than those who do not. This difference in personality can be quantified as extroversion level; in this study this was determined by presenting an excerpt of the Big Five Personality Inventory (Donahue & Kentle, 1991). The Big Five Personality Inventory (BFI) was originally created to measure the five main facets of personality. For the purposes of this study, only the questions pertaining to a person's extroversion level were needed. Participants, after answering the BFI sub-questions, took an adapted form of the Perceived Stress Scale (PSS) to determine their current level of stress (Cohen et al., 1983). The questions used in this study were adapted to only ask about the past hour, rather than the past month like the original scale does. These measures were taken in order to discover whether isolation affects individuals differently depending on their extroversion level, as this difference is still yet to be explored.

HYPOTHESES

It was expected that those with higher levels of extroversion would experience greater stress after completing the period of isolation. It was also expected that those with lower levels of extroversion would experience lower levels of stress after completing the period of isolation.

METHODS

Participants

A total of 16 people participated in the study. As determined by their responses to the Big Five Personality Inventory sub-questions, 14.3% were Introverts, 28.6% were Mild Introverts, 21.4% were Ambiverts, 21.4% were Mild Extroverts, and 14.3% were Extroverts (Figure 1). We feel as though this is an accurate representation of the target population as far as extroversion level goes, though the sample mostly consisted of 18-25 year olds, with the exception of one individual. It is unclear whether the results of the study would differ depending on the age of the participants.

Design/Measures

The independent variable was the level of extroversion of the participants, with the dependent variables being their stress levels, before and after being manipulated via a five-minute period of isolation. We used SPSS in IBM to run a one-way ANOVA and a Tukey least significant difference *post-hoc* test in order to determine what statistical significance, if any, these measures presented.

Procedures

Participants were given access to the online survey, consisting of the consent form (Appendix A) and the extroversion/stress quiz (Appendix B). Over the course of the quiz, they were asked to complete a series of questions measuring their level of extroversion via an excerpt of Big Five Personality Inventory. They were also asked about their current level of stress via an adapted form of the Perceived Stress Scale (PSS). Once they completed this section, they were asked to sit by themselves for five minutes, after which they completed the stress level

questionnaire again. Once they clicked 'Submit' on the online survey they were allowed to leave/close the survey window and were thanked for their participation.

RESULTS

Change in PSS

The change in stress participants experienced was determined by comparing their responses to the Perceived Stress Scale questions before and after the period of isolation. There were significant differences between groups before and after isolation [$F(4,13)=2.316$, $p<0.05$] (Figure 2), where extroverts showed the greatest reduction in total stress levels. According to the *post hoc* outcome, the groups most different from each other were Ambiverts and Extroverts.

Categorical Change in PSS

There were significant differences between groups in the categories of Confidence [$F(4,13)=10.221$, $p<0.05$], Going Your Way [$F(4,13)=5.029$, $p<0.05$], and Workload [$F(4,13)=4.414$, $p<0.05$]. Ambiverts and Extroverts had the largest change, in that Workload went up for Ambiverts and down for Extroverts. The groups most different from each other were Ambiverts and Extroverts in Workload. (Figure 3). The remaining questions in the change in PSS had no statistical significance or trends.

DISCUSSION

Change in PSS

The overall change in PSS scores showed that in general, the amount of stress the participants experienced went down after five minutes of isolation, which subverts the

expectation that extroverted people would experience an elevated stress level after being isolated. This may very well be because it is good to take a break once in a while when one is feeling stressed. Even though we expected stress levels to increase, the overall decrease may be due to the period of isolation being so short. As it is unethical to force individuals to isolate for too long, a shorter period of isolation was used for the study's purposes. To the participants, however, the isolation may have felt more like a welcome break from the stressors of college life rather than a true isolation experience.

Categorical Change in PSS

There was no significant change in Confidence for Introverts (perhaps because they tend to spend more time by themselves anyway), but Ambiverts and Extroverts experienced a dip in Confidence. This may be because since Ambiverts and Extroverts are less accustomed to spending time alone, they feel less confident when put in a room by themselves. Interestingly, Mild Introverts seemed to have the most dramatic dip in Confidence, perhaps because Mild Introverts like to have social support and experience a drop in confidence when they do not have it. In general, participants had differing levels of stress before the period of isolation, but they seemed to move towards more of a baseline after a quick break by themselves.

It should be noted that there was one individual, marked as an outlier, who may have had an effect on some of the results in this section. They were considered to be an ambivert (enjoyed going to parties but also enjoyed spending an evening by themselves). According to how they answered the PSS before and after isolation, they experienced a sharp decrease in stress over the five minutes alone, more dramatic than any other participant in the study. This outlier may have skewed the results slightly.

Limitations of the Study

There were a few limitations in this study, with the first involving the participants' environment for the period of isolation. There may have been discrepancies between one participant to the next (for example, some may have been able to hear people in other rooms, therefore introducing an element of social participation and compromising the quality of isolation they experienced).

Another limitation was the length of the isolation itself. Forcing a participant to isolate for too long would be unethical, but the five minutes of isolation may have been too short. The trend for stress to go down across all participants could have been due to the five minutes feeling more like a welcome break from stress, rather than a true experience of isolation. There is only so much isolation that can happen on a busy college campus, so if the same study was conducted with a sound-proof room with a guarantee of no distractions, it may have yielded different results.

CONCLUSIONS & FUTURE DIRECTIONS

Isolation, while detrimental in large doses, may very well be beneficial in moderation, especially when one is feeling stressed. The present study put this to the test by way of an online survey, which involved five minutes of isolation. While the hypothesis was that extroverts would be more stressed by isolation than introverts, this expectation was subverted with the actual results. Instead of one group experiencing more stress than the other, all participants experienced a decrease in stress after being by themselves for five minutes. For future studies, neuroticism is a helpful measure that could be added in order to account for the dip in confidence after

isolation, to determine if the cause was overthinking. We may also use the full PSS scale and Big Five Personality Inventory, instead of condensed versions. This may help lend significance to the results. We may also increase the duration of the isolation period (no longer than 15-20 mins) in order to provide a more accurate representation of true isolation.

While the bustle of a college campus is not the most conducive environment to run an experiment on isolation, the results of this study were still useful, indeed. It shows that even though one may really enjoy being around other people and socializing, it is still beneficial to take a break and be alone with one's thoughts. This goes beyond college students and may be effective in the working world, as well.

REFERENCES

Cohen, S., Kamarck, T., & Mermelstein, R. (1983). *Perceived Stress Scale* [Database record].

APA PsycTests. <https://doi.org/10.1037/t02889-000>

John, O. P., Donahue, E. M., & Kentle, R. L. (1991). *Big Five Inventory (BFI)* [Database record].

APA PsycTests. <https://doi.org/10.1037/t07550-000>

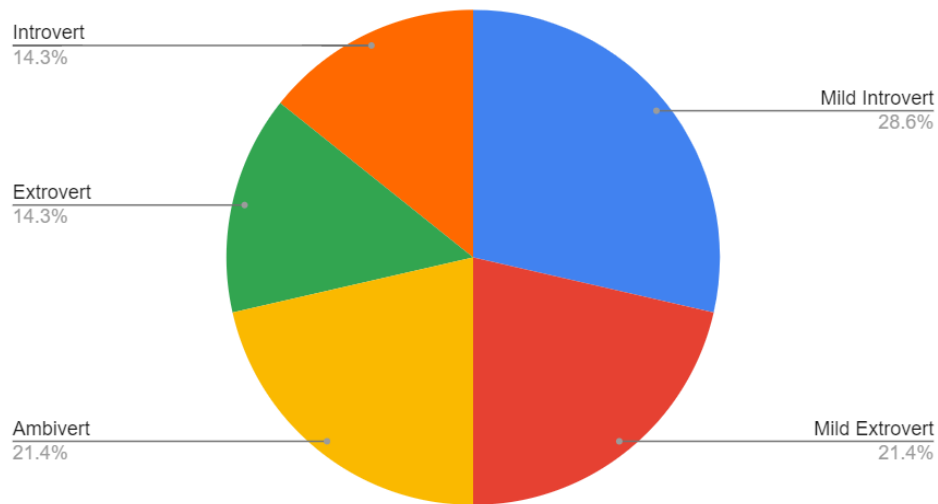
FIGURES**Extroversion Level**

Figure 1. Extroversion Level. A chart illustrating the percentages of each personality type who took the survey.

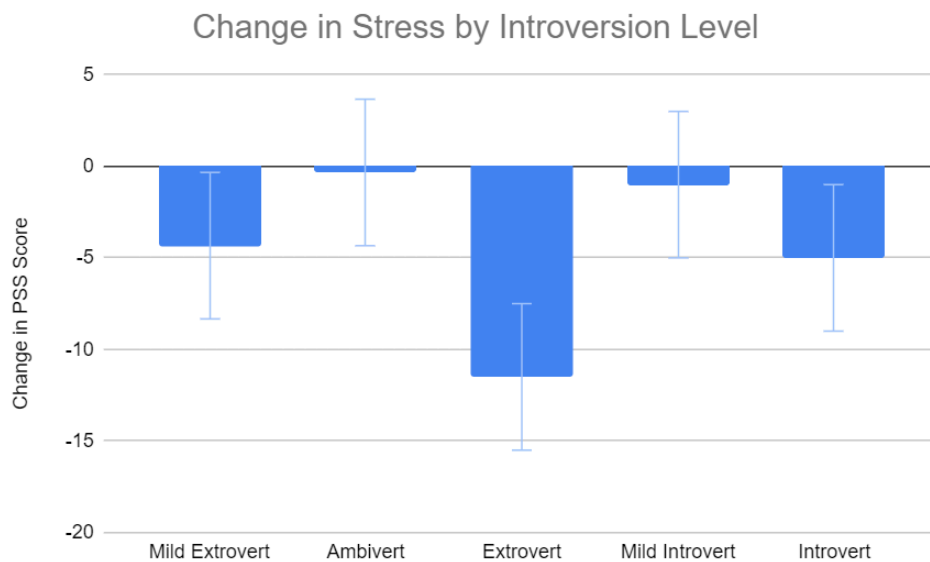


Figure 2. Change in Stress by Introversion Level. Describes the change in stress scores after the period of isolation, categorized by type of personality in the scale of extroversion.

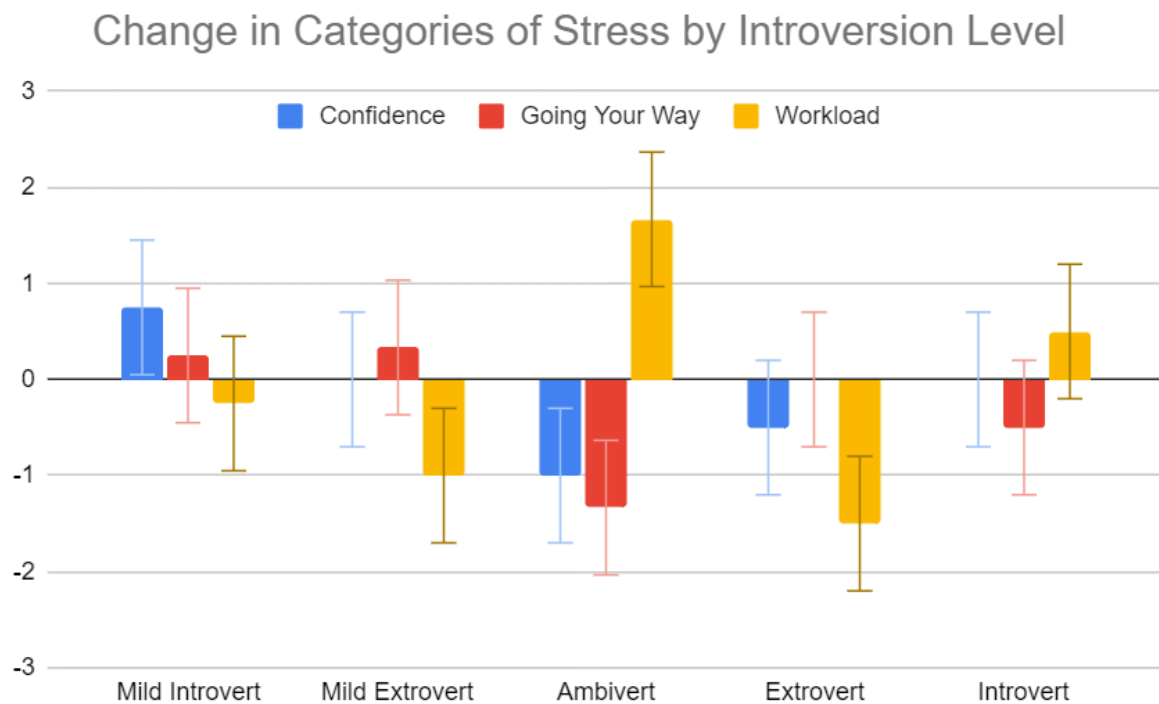


Figure 3. Change in Categories of Stress by Introversion Level. Shows the results of three particular questions that showed a trend in the change in PSS, categorized by personality type in the scale of extroversion.

APPENDIX A

Consent to Participate in Research

The Research Team

The following research is being conducted by a trained research team who may be reached at the following contacts:

Primary Researcher:

Minx Polczynski
cpolczynski@rochesteru.edu

Faculty Sponsor:

Dr. Jessica J Matyas
JMatyas@rochesteru.edu
Office: (248) 218 - 2157

Purpose of the study

The major goals of the present study are to study the effects of isolation on persons of varying extroversion levels. We hope to find whether there is a difference in the effect isolation has on an introvert vs an extrovert.

Procedures

This experiment is expected to take 20 minutes to complete. You will be asked to take a brief personality and stress level test, be subject to a five minute interval of isolation, then take the stress test again. You are welcome to contact the research team after completing your participation if you would like to learn more about the results of the experiment.

Risks Involved in Participation

Care has been taken to minimize or eliminate significant risks during the procedures of this experiment. Those who feel distressed or uncomfortable are invited to reach out to the MacKinnon Psychology and Counseling Center by emailing MSchroeder@rochesteru.edu. Potential negative effects that you may experience during the course of this study include:

- Temporary discomfort due to a five minute interval of isolation
- Temporary discomfort due to consideration of stressors and worries

While the present study is collecting data such as your name and extroversion level, this data will remain confidential and be stored in a secure server until the completion of the study, at which time it will be destroyed. At no time will your personal information be available to anyone outside of the above research team.

Benefits of the Current Research

If successful, the results of this study will show there is a difference in effects of isolation on an introvert vs an extrovert. Participation in the experiment may lead the participants to feel positive emotions like satisfaction and social approval, as well as a sense of accomplishment in

being part of a research effort. May also provide a better understanding of what to expect from isolation, and how to better alleviate the stress produced from it.

Signature of Informed Consent

I have read and understood the above information, and voluntarily agree to participate. I understand that my participation in this study is entirely voluntary, and that I may withdraw my consent at any time with no penalty or consequences.

Your signature _____ Date: _____

Your name (printed) _____

_____ (initial) I would like to receive a copy of this form upon completion

APPENDIX B

Stress and Extroversion Survey Instrument

Demographics & Extroversion Level

What is your age?

- <18 (will end participation)
- 18 - 25
- 26 - 40
- 41 - 65
- 66+

Using questions extracted from the Big Five Personality Inventory (questions 1-4) as well as original items.

Please use the following scale to answer the questions below:

1 = Strongly disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, 5 = Strongly agree

I am a person who...

1. _____ Is outgoing, sociable.
2. _____ Tends to be quiet.
3. _____ Is talkative.
4. _____ Is sometimes shy, introverted.
5. _____ Enjoys going to parties.
6. _____ Enjoys spending an evening by myself.

Stress levels

The following survey instrument contains questions adapted from the protocols of the Perceived Stress Scale (1983). To be given to the participant before and after temporary isolation.

Please use the following scale to answer the questions below:

1 = never, 2 = almost never, 3 = sometimes, 4 = fairly often, 5 = very often

In the past hour, how often have you:

1. _____ Been upset because of something that happened unexpectedly?
2. _____ Felt you were unable to control important things in your life?
3. _____ Felt nervous or stressed?
4. _____ Felt confident in yourself & your ability to handle personal problems?
5. _____ Felt things were going your way?
6. _____ Found you could not cope with your workload?
7. _____ Have been able to control irritations in your life?
8. _____ Felt you were on top of things?
9. _____ Been angry because of things that happened outside of your control?
10. _____ Felt overwhelmed by difficulties piling up?

How to Isolate

Go somewhere you can be by yourself for five minutes. Please do not use electronic devices that will keep you distracted during this time. Once the five minutes are up, you may proceed to the next part of the survey.

The following survey instrument contains questions adapted from the protocols of the Perceived Stress Scale (1983). To be given to the participant before and after temporary isolation.

Please use the following scale to answer the questions below:

1 = never, 2 = almost never, 3 = sometimes, 4 = fairly often, 5 = very often

During the period of isolation, did you/were you:

1. _____ Upset because of something that happened unexpectedly?
2. _____ Feel you were unable to control important things in your life?
3. _____ Feel nervous or stressed?
4. _____ Feel confident in yourself & your ability to handle personal problems?
5. _____ Feel things were going your way?
6. _____ Find you could not cope with your workload?
7. _____ Able to control irritations in your life?
8. _____ Feel you were on top of things?
9. _____ Angry because of things that happened outside of your control?
10. _____ Feel overwhelmed by difficulties piling up?

All done!

You're free to go! If you'd like, you can pick out some snacks on your way out :)