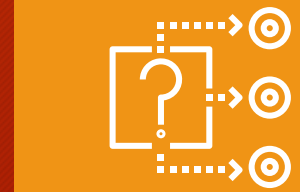
The Effects of the Coronavirus Disease of 2019 (COVID-19) Impacting Motivation

Tracy Dubin, MA
TDubin2170@aol.com
Clinical Psychology Researcher
West Los Angeles College

Acknowledgement: Professor Milan Suzuki, MS
Mentor

Much is documented on COVID-19's acute and lingering psychological and physiological effects, but little details its influence upon motivational drive. This observational study examined the relationship between COVID-19's effects on intrinsic motivation. Canvassed through convenience sampling, sixty Southern California residents were categorized into two groups: previously and never COVID-19 positive.

ABSTRACT



Both groups took the Interest/Enjoyment subscale of the Intrinsic Motivation Inventory self-reported questionnaire, with their motivational scores compared using an independent samples t-test. Those who never had COVID-19 rated higher levels of intrinsic motivation, revealing the necessity for future psychological work increasing motivational drive within ever-growing COVID-19 positive populations.

Keywords: COVID-19, motivation, Intrinsic Motivation Inventory

INTRODUCTION

While a physiological focus was at the forefront, world researchers have transitioned towards studying COVID-19's impact on mental health.

- South India: researcher Chakrabarti (2021) found that positive COVID-19 patients admitted into Saveetha Medical College and Hospital showed a high prevalence of depression and insomnia, with insomnia most noted in elderly covid positive patients and depression highest in positive female patients. Within his study, 5% of the total COVID-19 positive patients experienced suicidal ideations.
- Sub-Saharan Africa: researchers Fogang et al. (2021) found high frequencies of neurological manifestations occurred in 63.8% of their study's positive COVID-19 patients at the Bafoussam Regional Hospital in Cameroon: they had headaches (39.0%), myalgia (35.6%), anosmia (11.9%), impaired consciousness (10.7%), and delirium (5.6%).
- Brazil: researchers Ismael et al. (2021) studied participants aged 18+ with mild cases of COVID-19 who were under home quarantine. They found that psychiatric symptoms (depression, anxiety, and post-traumatic stress) in these COVID-19+ patients from São Caetano do Sul remained prevalent *after* their acute illness phase and stayed present during a post-infection period.

The intense psychological impact of COVID-19 is undeniable, but studies exploring its effect on personal motivation are nearly nonexistent.

- Numerous studies have investigated the correlation between the pandemic and the motivation to continually engage in educational studies online (Yu et al., 2021), as well as the correlation between being COVID-19+ and engaging in prosocial behavior to stop the virus's spread (Jordan et al., 2021); but, there's no conclusive research done on COVID-19 impacting intrinsic motivation.
- In November 2021, the National Institute of Mental Health (NIMH) completed a study on the "Impact of Anxiety and Motivation of COVID-19 and Predictors of Individual Responses," though findings have yet to be published (ClinicalTrials.gov, 2020).

Since it's been previously confirmed that being COVID-19 positive increases psychological symptoms of depression, anxiety, and post-traumatic stress, it can be hypothesized that being COVID-19 positive decreases intrinsic motivational drive.

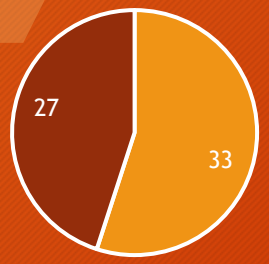
- This study proposes to examine the relationship between the effects of COVID-19 on intrinsic motivation within a randomized, Southern California population of those who've had and never had COVID-19.
- Hypothesis: having had COVID-19 will affect intrinsic motivational levels, specifically negatively. Good health appears to drive motivation, while contracting COVID-19 is the antithesis of wellbeing. Study participants who have not had COVID-19 are expected to show higher levels of intrinsic, personal motivation.

MATERIALS and METHODS

Participants

- N=60 Southern California residents (30 men, 29 female, 1 non-binary) aged 23 to 86, representing the counties of Ventura, Los Angeles, Orange, Riverside, San Bernardino, and San Diego.

COVID-19 Self-Reported Diagnostic History of 60 Participants



Apparatus: Convenience Sampling

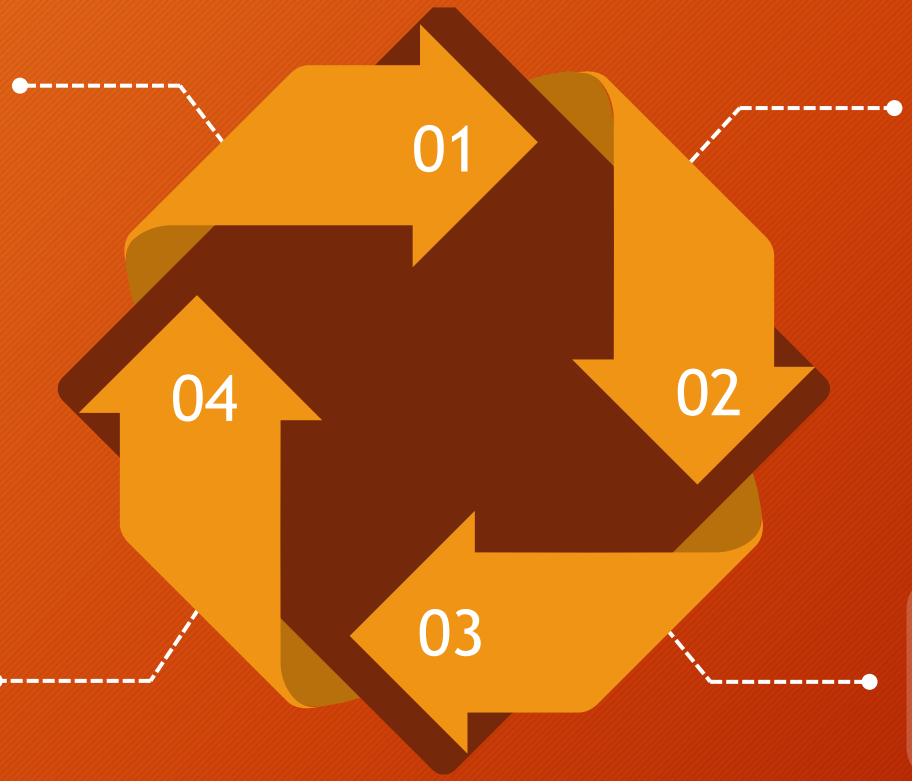
- Via social media (Instagram Stories, Facebook Stories, Facebook Post), the researcher distributed a Google Forms link to an online survey detailing the Interest/Enjoyment subscale of the Intrinsic Motivation Inventory (IMI).
- Participants were voluntary respondents *as well as* those the researcher personally asked to participate, ensuring relatively equal ratios of men to women and those who had and had not previously contracted COVID-19.
- No monetary compensation provided.

Materials: Google Forms Survey, Entitled "Psych Research Project"

- Informed Consent, and upon agreement, 10 questions: 3 demographic then 7 for the Interest/Enjoyment subscale of the Intrinsic Motivation Inventory (IMI).
- Demographic questions: age, gender, and COVID-19 diagnostic history (responding "yes" or "no" to whether previously been diagnosed with COVID-19).
- IMI questions: from IMI Interest/Enjoyment subscale, available for free download after approved registration from the Center for Self-Determination Theory's website (Center for Self-Determination Theory [CSDT], 2022). See Appendix on last slide.
- All questions require answers to move from section to section and ultimately submit. Debriefing at conclusion.

PROCEDURE

1) All participant engagement conducted online: convenience sampled participants through social media



2) Participants led to Google Forms Survey

3) Participants consented to study, self-reported if they previously had COVID-19 (in order for researcher to assign them into one of two groups), and then answered the IMI's Interest/Enjoyment subscale survey questions**

4) After survey completion, data calculated using Microsoft Excel's Data Analysis add-in feature. Used t-Test: Two-Sample Assuming Equal Variance to compare differences in current levels of intrinsic motivation between COVID-19 positive participants and those who never had COVID-19. Inferential statistics made.

** **Note**: When taking the IMI's Interest/Enjoyment subscale survey, participants picked something of their own interest or enjoyment within the last 3 weeks when reading the word "activity" in each survey question. Everyone evidently imagined something different, which was expected and acceptable. When studying general motivation, the focus is not on a single activity, but on the intrinsic *desire* to perform that activity.

RESULTS

t-Test: Two-Sample Assuming Equal Variances

	Variable 1: No COVID-19 IMI Subscale Score	*Variable 2*: Had COVID-19 IMI Subscale Score
Mean	6.355	5.2381
Variance	0.3165	2.7692
Observations	33	27
Pooled Variance	1.416	
Hypothesized Mean Difference	0	
df	58	
t Stat	3.6169	
P(T<=t) one-tail	0.0003	
t Critical one-tail	1.6716	
P(T<=t) two-tail	0.0006	
t Critical two-tail	2.0017	

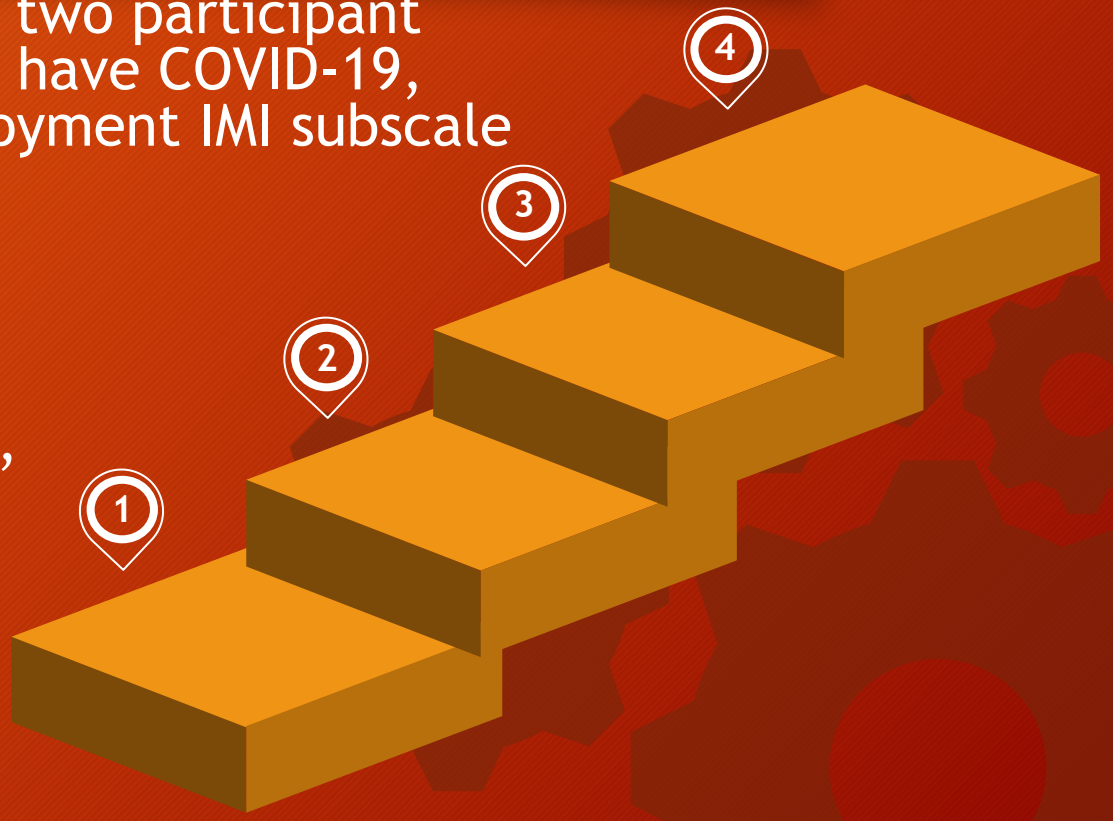
***Table 1**: Between-Subjects Effect for COVID-19 Diagnostic History and IMI Interest/Enjoyment Subscale Scores*

t-value = 3.62. Because 3.62 is > than the t-critical (one-tail) of 1.67, we can reject the null hypothesis.

We can conclude there is a difference on levels of intrinsic motivation between people who've had COVID-19 before and those who've never had it. COVID-19 diagnostic history appears to have statistical significance upon intrinsic motivation.

RESULTS

- High t-score of 3.62 indicates the two participant groups, those who had and didn't have COVID-19, *greatly* vary in their Interest/Enjoyment IMI subscale scores
- p-value of .00 is < α of .05, leading to reject the null hypothesis
- Because the p-value of .00 is < .1, there's evidence of statistical significance
- The researcher rejected the null hypothesis, accepting H_1: $\mu_1 \neq \mu_2$.

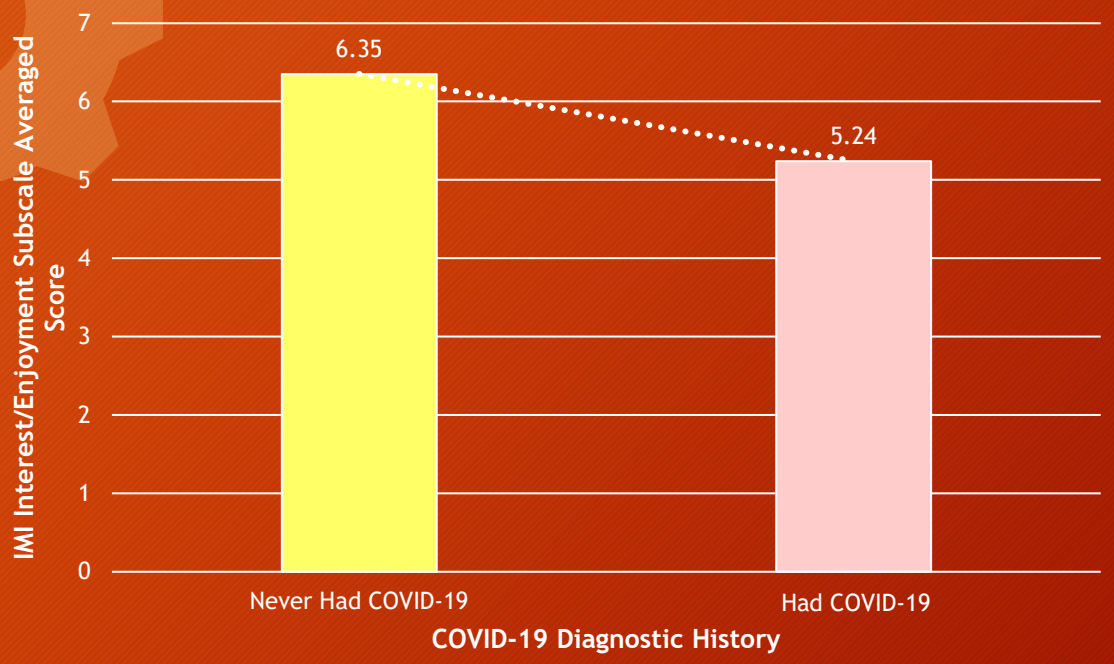


Since the t-value of 3.62 is above the t-critical (one-tail) value of 1.67, this study rejects the H_0.

Descriptive Statistics

NO COVID-19 | and | HAD COVID-19

No COVID-19	
Mean	6.354978
Standard Error	0.09793
Median	6.428571
Mode	7
Standard Deviation	0.562567
Sample Variance	0.316481
Kurtosis	-0.89373
Skewness	-0.54014
Range	1.714286
Minimum	5.285714
Maximum	7
Sum	209.7143
Count	33



Had COVID-19	
Mean	5.238095
Standard Error	0.320256
Median	5.857143
Mode	6.571429
Standard Deviation	1.664101
Sample Variance	2.769231
Kurtosis	0.844379
Skewness	-1.24854
Range	5.857143
Minimum	1
Maximum	6.857143
Sum	141.4286
Count	27

***Figure 1**: COVID-19 Diagnostic History Differences on Self-Reported, Averaged Levels of Intrinsic Motivation Scores*

DISCUSSION

The present study set out to find if any significant difference in intrinsic motivation exits between Southern Californians who had previously contracted COVID-19 and those who never had the virus.

Results showed a statistically significant difference, with previously COVID-19 positive participants reporting lower IMI average scores. This supported the researcher's hypothesis and reveals a need for available mental health counseling for those COVID-19 positive seeking increased motivational drive.

Why was this so? The researcher believes COVID-19's symptomatic general malaise contributed to avolition.

Study strengths: high number of participants (60) meets Central Limit Theorem, represents various Southern California locations, and provides good inferential statistics.

Study weaknesses: the survey wording asked participants if they had been previously diagnosed with COVID-19, ignoring that some still could have contracted the virus, but their test results showed false negatives and/or they never got tested. Survey wording could have read, "Have you ever been previously diagnosed with COVID-19 and/or did you ever believe you were COVID-19 positive?" Yet, that wording could lead to participants falsely affirming they had COVID-19.

Another weakness was this study couldn't control for behavior and mood. When surveying, participants' current mood could have greatly influenced their answers, reflecting a temporary choice and not a permanent, accurate statistic.

Also, maybe COVID-19 diagnostic history has nothing to do with levels of intrinsic motivation. Maybe participants weren't motivated before contracting COVID-19, and the virus has no correlation with their IMI Interest/Enjoyment subscale score. Other biopsychosocial factors could be decreasing their motivation.

Future studies: generalizing it to statewide populations, the whole United States, and worldwide populaces. Maybe different cultures have different views on intrinsic motivation. The Southern California sample used may affect external validity; so for greater accuracy, the study should be replicated amongst other populations and cultures.

This study also didn't report degrees of COVID-19 severity – inpatient, outpatient, those diagnosed with inaccurate tests and those who had COVID-19 but never diagnosed themselves. The severity of variable sickness within having COVID-19 could affect intrinsic motivation. That wasn't studied here, but future studies could do multiple regressions with COVID-19 symptom severity.

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Appendix: Survey Material was Modified from the following Original IMI

INTRINSIC MOTIVATION INVENTORY

Interest/Enjoyment Subscale

For each of the following statements, please indicate how true it is for you, using the following scale: 1 2 3 4 5 6 7, with

1 = not at all true

4 = somewhat true

7 = very true

and other numbers indicating in between those markers. When reading the word "activity," pick something of your own interest or enjoyment within the last three weeks.

- I enjoyed doing this activity very much. _____
- This activity was fun to do. _____
- I thought this was a boring activity. _____ (R)
- This activity did not hold my attention at all. _____ (R)
- I would describe this activity as very interesting. _____
- I thought this activity was quite enjoyable. _____
- While I was doing this activity, I was thinking about how much I enjoyed it. _____

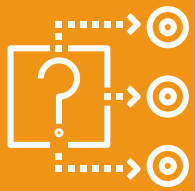
SCORING THE IMI

To score this instrument, you must first reverse score the items for which an (R) is shown after them. To do that, subtract the item response from 8, and use the resulting number as the item score. Then, calculate subscale scores by averaging across all of the items on that subscale. The subscale scores are then used in the analyses of relevant questions.

The project was continued, adding 17 more participants, thus making N=77 over the initial N=60. This change *changed* everything: the null hypothesis now failed to be rejected; no statistical significance was found amongst COVID-19 diagnostic history and motivational levels.

- $t(75) = .80$, $p = .21$
- However, those who never had COVID-19 showed a slightly higher average IMI Interest/Enjoyment subscale score ($M = 5.75$, $SD = 1.27$) than those who previously had COVID-19 ($M = 5.48$, $SD = 1.64$)

ADDENDUM



A potential problem was this study's wording of its survey test, regarding "activity." In Debriefing, participants reported confusion as to whether they were to pick a daily mandatory task or welcomed habit. Though the survey had no right or wrong answers, some participants contacted the researcher asking if they had done it correctly.

Improvement could be made with rewording the survey and distributing it to populations outside of Southern California.

Thank you.