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# A Self-Determination Theory Approach for Understanding the Impact of COVID-19 on College Students' Motivation

**Abstract**

College students' retrospective reports commonly indicate loss of motivation as a result of the COVID-19 pandemic. Using Self-Determination Theory, the present study provided a more nuanced examination of the pandemic's motivational impacts by measuring actual change in six distinct types of motivation. We assessed motivation in two cohorts of students during their first and fourth years of college, with the fourth year beginning before the pandemic in one cohort ($n$ = 218) but after the pandemic in the other ($n$ = 290). Compared to the pre-pandemic cohort, the COVID cohort showed sharper declines in identified and intrinsic motivation but no differences in controlled motivation or amotivation. Motivational loss associated with the COVID-19 pandemic appears to be specific to autonomous motives.

Word Count: 1724

## Theoretical Framework and Objectives

The COVID-19 pandemic has disrupted higher education. It began with the large scale shift to online instruction in March 2020 and continued through the 2020-2021 academic year with modifications to nearly all aspects of functioning including instructional models, residential offerings, student enrollment, and institutional finances (June & Elias, 2021; Smalley, 2021). There have been similar disruptions to college students' well-being, with substantial increases in the prevalence of depression and anxiety as well as the perception that these mental health challenges negatively impact academic performance (AAC&U, 2021; Dennon, 2021; Healthy Minds Network, 2020; Hicks et al., 2021).

One of the most common COVID impacts reported by college students is a loss of motivation (Gonzalez-Ramirez et al., 2021; Hicks et al., 2021; Tasso et al., 2021). Indeed, 79% of college students in a large, nationally representative study indicated that staying motivated during online instruction was a problem (Means et al., 2020). Likewise, when asked about the most stressful aspect of the pandemic, approximately one-third of undergraduates at a large research university cited motivational difficulties (Usher et al., 2021). These published reports focused on motivational loss during the spring 2020 shut-down, but it is likely that motivational challenges persisted into the 2020-2021 academic year in light of continued online instruction and COVID-related adaptations. One goal of the present study was to test this hypothesis by surveying students 10 months into the pandemic, in December 2020.

A second goal of the present study was to provide a more fine-grained analysis of motivational change during the COVID-19 pandemic. Although reports of pandemic-related motivational loss have conceptualized motivation as a unitary construct, motivation can vary not only in quantity or amount but also in quality or type. Indeed, Self-Determination Theory

(SDT) posits that motivation exists along a continuum ranging from fully authentic, self-directed intrinsic motivation to externally controlled regulation to the complete absence of motivation altogether (i.e., amotivation; Ryan & Deci, 2020). One could imagine that the stresses of the pandemic might impact some motive types (e.g., those grounded in curiosity and interest) more than others (e.g., those grounded in guilt and shame). Therefore, we explored the impact of the COVID-19 pandemic on the full range of motivation types within the SDT continuum.

We did so by comparing motivational change in two consecutive and largely identical cohorts of college students who were surveyed in their first and fourth years of college, and differed only in whether their fourth year of college began before or after the COVID pandemic. This approach allows for clearer inferences of pandemic-related effects than do retrospective reports from students who – at a single point in time – reflected back to consider how their current motivation compared to their previous motivation.

Assuming persistent motivational challenges related to COVID-19, we expected to find significant differences between pre- and post-pandemic cohorts in motivation trajectories from the first to fourth year of college. There was little basis for formal hypotheses regarding the differential impact for distinct motive types. We did, however, tentatively anticipate that the pandemic might (a) increase amotivation given reports of pandemic-related motivational loss and (b) dampen autonomous motives given that they require the support of basic psychological needs (for relatedness, competence, and autonomy; Ryan & Deci, 2000), which were almost certainly compromised by the pandemic (e.g., Gonzalez-Ramirez et al., 2021).

## Method

### Participants and Procedure

Data were drawn from a larger longitudinal study focusing on motivational change among undergraduates in a liberal arts college context (see Authors, 2020). The present analysis focused on two consecutive cohorts of students matriculating in Fall 2016 ($n$ = 218) and Fall 2017 ($n$ = 290). Students provided survey data on their academic motivation at three timepoints: December of year 1 (T1; $n$ = 327), May of year 1 (T2; $n$ = 335), and December of year 4 (T3; $n$ = 268). This third timepoint was collected pre-pandemic (December 2019) for Cohort 1, but approximately 10 months into the pandemic (December 2020) for Cohort 2. Academic achievement data were collected from institutional records.

### Measures

**Academic motivation**. Using the Academic Self-Regulation Scale (Vansteenskiste et al., 2009), students rated the importance of a variety of motives for their academic work on a 5-point scale (1 = *completely not important*, 5 = *very important*). Subscales reflected intrinsic motivation (e.g., "because I enjoy doing it"; 4 items; α = .86 - .88), identified regulation (e.g., "because it is personally important to me"; 4 items; α = .79 - .84), positive introjected regulation (e.g., "because I want others to think I'm smart"; 2 items; α = .80 - .85), negative introjected regulation (e.g., "because I would feel ashamed if I didn't study"; 2 items; α = .80 - .82), and external regulation (e.g., "because others oblige me to do so"; 4 items; α = .85 - .86). In addition, the Academic Motivation Scale (Vallerand et al., 1992) was used to assess amotivation (e.g., "Honestly, I don't know; I really feel that I am wasting my time in school"; 4 items; α = .86 - .89).

**Academic Achievement**. Academic achievement was indexed by GPA in the fall of year 2 and the spring of year 4.

**Analytic Plan**

Following confirmatory factor analyses and tests of longitudinal measurement invariance, latent change score models (McArdle, 2009) were used to examine changes in motivation between each measurement occasion. We used separate models for each construct, for a total of six models. Next, we added cohort (0 = Cohort 1, 1 = Cohort 2) as a predictor of initial levels and change scores to examine potential differences in motivation trajectories across the two cohorts who differentially experienced the pandemic. We also added year 2 and year 4 grades as predictors and outcomes of the relevant change scores in the model. Figure 1 shows the path diagram describing the analytic models.

## Results

Confirmatory factor analyses indicated acceptable fit for the 6-factor model at each timepoint (RMSEA = .064 to .076, CFI = .935 to .952, TLI = .916 to .938; see Table 1 for specific results), and tests of measurement invariance supported strong, strong partial, or strict invariance over time for each of the six constructs (see Table 1).

Latent change score models for the two cohorts combined (Table 1, Figure 1) indicated patterns of stability for all constructs (see Figure 2). Specifically, initial levels ranged from low ($M$ = 1.84) for amotivation to high ($M$ = 4.14) for identified regulation, and all change score estimates were not significantly different from zero for all six constructs (Figure 2; ΔT2T1 = -0.28 to 0.01; ΔT3T2 = -0.10 to 0.12).

When cohort and grades (year 2 and year 4) were added to the model as predictors and outcomes of initial levels of motivation and change scores (see Figure 1), cohort significantly predicted the ΔT3T2 estimates for identified regulation and intrinsic motivation ($b$ = -.24 to -.17, $p$ < .05), but not initial levels or any other change estimates. Thus, although the two cohorts showed similar trajectories during their first year of college, students who completed their final year of college during the pandemic reported steeper declines in intrinsic motivation and identified regulation between the end of their first year and their final year (see Figure 3).

Changes in identified and intrinsic motivation did not predict year 4 grades when controlling for year 2 grades. However, cohort significantly predicted grades in both models ($b$ = -0.14 for both, $p$ < .05), indicating that Cohort 2 had lower grades than Cohort 1. Thus, in addition to experiencing steeper declines in some forms of motivation, Cohort 2 also had lower achievement, but the steeper declines in motivation did not appear to explain the lower achievement levels.

## Conclusions and Significance

The present study compared motivational change across two largely identical cohorts differing only in whether their fourth year of college began before or after the COVID-19 pandemic. Not surprisingly, there were no differences across cohorts in any of the motivation types from T1 to T2 when conditions for the two groups were quite similar. There were, however, significant differences from T2 to T3 in identified regulation and intrinsic motivation, with the COVID cohort demonstrating greater motivational loss than the pre-pandemic cohort.

These findings suggest that the effects of the pandemic were motivationally specific, largely sapping enjoyment, curiosity-based engagement, and the sense that achievement is personally meaningful. Perhaps students in the COVID cohort struggled to sustain these more autonomous types of motivation because of threats to basic needs support. Indeed, college students' experiences of relatedness, competence, and autonomy were almost certainly compromised by social isolation, difficulty adjusting to new teaching methods, and the innumerable constraints on their daily behaviors during the pandemic (Gonzalez-Ramirez et al., 2021; Means et al., 2020; Tasso et al., 2021; Usher et al., 2021).

There was no effect of COVID-19 on the more controlled motives or amotivation. This is interesting to consider in light of Rahiem's (2021) finding that autonomous motives were more prominent than controlled motives among students from Indonesia who remained motivated in spite of pandemic limitations. It is surprising, however, that there was no growth in amotivation among the COVID cohort given the general motivational loss that has been reported widely in the literature (e.g., Hicks et al., 2021; Tasso et al., 2021, Usher et al., 2021). Perhaps what appears to be an overall motivational loss is actually a more specific loss to autonomous types of motivation, which speaks to the value of a more nuanced approach to assessing motivation.

Although autonomous motivation typically predicts high academic achievement (Brunet et al., 2015; Taylor et al., 2014), motivational change did not predict GPA in the present study. There was, however, a significant effect of cohort on GPA such that the COVID cohort performed worse in the spring of their fourth year than the pre-pandemic cohort. Perhaps lower GPAs for the COVID cohort were driven by aspects of the pandemic that were not specific to motivation, such as increases in stress or decreases in attentional control (see Hicks et al., 2021). This is consistent with other reports of difficulties with self-regulation (Usher et al, 2021), which are related to but distinct from motivation (Zimmerman, 2000).

Overall, then, the present study showed that motivational loss associated with the COVID-19 pandemic was both long-lasting and specific to autonomous motives. Remediation efforts, therefore, might focus on increasing connection, providing appropriate structure, and implementing autonomy-supportive instructional practices.

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**Table 1**

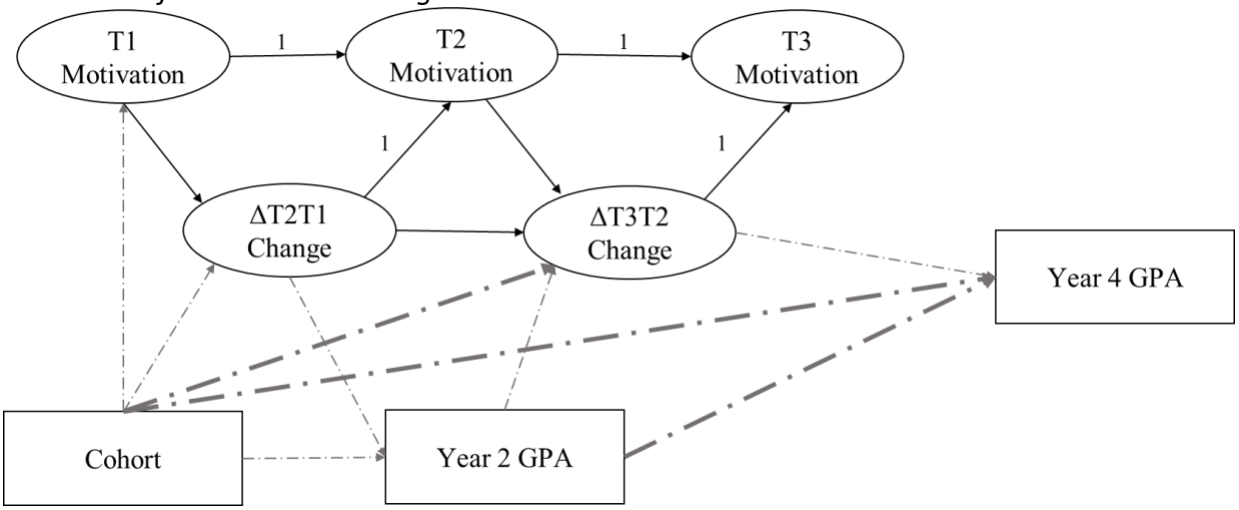
*Fit Statistics for Confirmatory Factor Analysis, Measurement Invariance, and Latent Change Models*

| Model | $\chi^2$ | df | RMSEA | CFI | Δ CFI | TLI | SRMR |
|---|---|---|---|---|---|---|---|
| Confirmatory Factor Analyses | | | | | | | |
| T1 6-factor | 326.187 | 118 | 0.073 | 0.941 | | 0.923 | 0.051 |
| T2 6-factor | 348.379 | 118 | 0.076 | 0.935 | | 0.916 | 0.047 |
| T3 6-factor | 245.542 | 118 | 0.064 | 0.952 | | 0.938 | 0.048 |
| Measurement Invariance Over Time: Amotivation | | | | | | | |
| Configural | 276.134 | 98 | 0.065 | 0.935 | | 0.92 | 0.063 |
| Weak | 303.273 | 107 | 0.065 | 0.928 | -0.007 | 0.919 | 0.072 |
| **Strong Partial*** | **326.053** | **115** | **0.065** | **0.923** | **-0.005** | **0.919** | **0.072** |
| Strict | 383.210 | 127 | 0.068 | 0.906 | -0.017 | 0.911 | 0.078 |
| Measurement Invariance Over Time: External | | | | | | | |
| Configural | 140.599 | 48 | 0.067 | 0.95 | | 0.932 | 0.052 |
| Weak | 145.837 | 54 | 0.063 | 0.951 | 0.001 | 0.94 | 0.053 |
| **Strong** | **150.408** | **60** | **0.059** | **0.951** | **0** | **0.947** | **0.054** |
| Strict | 166.798 | 69 | 0.057 | 0.947 | -0.004 | 0.95 | 0.052 |
| Measurement Invariance Over Time: Negative Introjection | | | | | | | |
| Configural | 25.299 | 14 | 0.043 | 0.988 | | 0.975 | 0.028 |
| Weak | 26.831 | 17 | 0.037 | 0.989 | 0.001 | 0.982 | 0.033 |
| Strong | 28.669 | 20 | 0.032 | 0.99 | 0.001 | 0.987 | 0.031 |
| **Strict** | **35.116** | **26** | **0.028** | **0.99** | **0** | **0.989** | **0.043** |
| Measurement Invariance Over Time: Positive Introjection | | | | | | | |
| Configural | 47.175 | 14 | 0.074 | 0.967 | | 0.933 | 0.031 |
| Weak | 48.465 | 17 | 0.065 | 0.968 | 0.001 | 0.948 | 0.034 |
| **Strong** | **50.840** | **20** | **0.06** | **0.969** | **0.001** | **0.957** | **0.036** |
| Strict | 66.509 | 26 | 0.06 | 0.959 | -0.01 | 0.956 | 0.05 |
| Measurement Invariance Over Time: Identified | | | | | | | |
| Configural | 146.778 | 48 | 0.069 | 0.935 | | 0.91 | 0.051 |
| Weak | 159.097 | 54 | 0.067 | 0.93 | -0.005 | 0.915 | 0.065 |
| **Strong** | **161.676** | **59** | **0.063** | **0.932** | **0.002** | **0.924** | **0.068** |
| Strict | 195.061 | 68 | 0.066 | 0.916 | -0.016 | 0.918 | 0.107 |
| Measurement Invariance Over Time: Intrinsic | | | | | | | |
| Configural | 282.499 | 98 | 0.066 | 0.93 | | 0.915 | 0.06 |
| Weak | 303.731 | 107 | 0.065 | 0.926 | -0.004 | 0.917 | 0.075 |
| **Strong** | **315.822** | **116** | **0.063** | **0.925** | **-0.001** | **0.922** | **0.075** |
| Strict | 341.128 | 128 | 0.062 | 0.919 | -0.006 | 0.924 | 0.085 |
| Latent Change Models | | | | | | | |
| Amotivation | 236.669 | 62 | 0.081 | 0.926 | | 0.921 | 0.062 |
| External | 101.314 | 32 | 0.071 | 0.957 | | 0.951 | 0.053 |
| Neg. Introjection | 16.033 | 10 | 0.038 | 0.992 | | 0.988 | 0.025 |
| Positive Introjection | 25.860 | 10 | 0.061 | 0.981 | | 0.972 | 0.023 |
| Identified | 123.828 | 31 | 0.084 | 0.93 | | 0.919 | 0.072 |
| Intrinsic | 188.477 | 63 | 0.068 | 0.945 | | 0.943 | 0.067 |

*The intercept of one item at T2 was allowed to estimate freely.

**Figure 1**

*Latent Change Model Including Initial Levels of Motivation, Changes in Motivation, and Correlates of Motivational Changes*




Note: Models were conducted separately for each motivation type. Solid line paths indicate the initial baseline latent change score model. Dashed lines indicate paths added to examine predictors (cohort and year 2 GPA) and an outcome (year 4 GPA) of changes in motivation. Bolded dashed paths are significant at $p < .05$. The pattern above applies to both identified regulation and intrinsic motivation.

**Figure 2**

*Model-Implied Trajectories of Motivation for Cohorts 1 and 2 Combined*

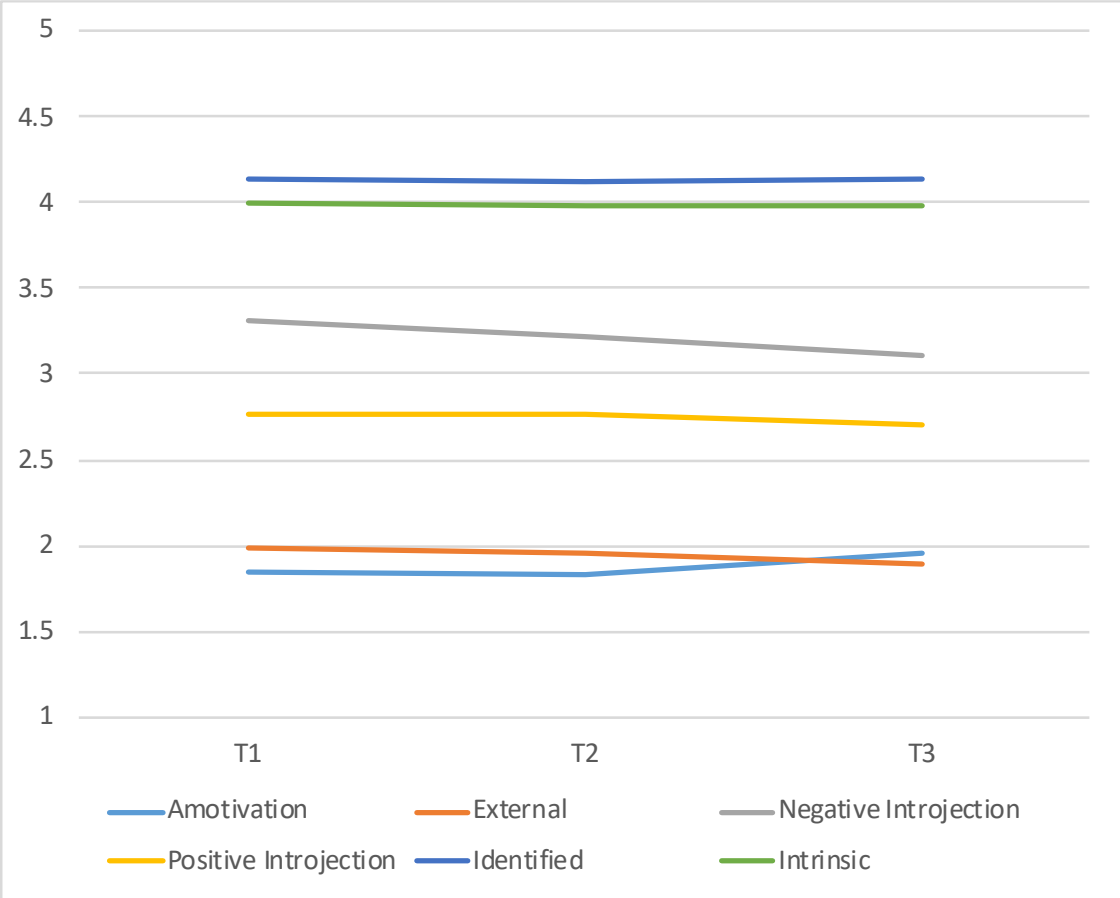
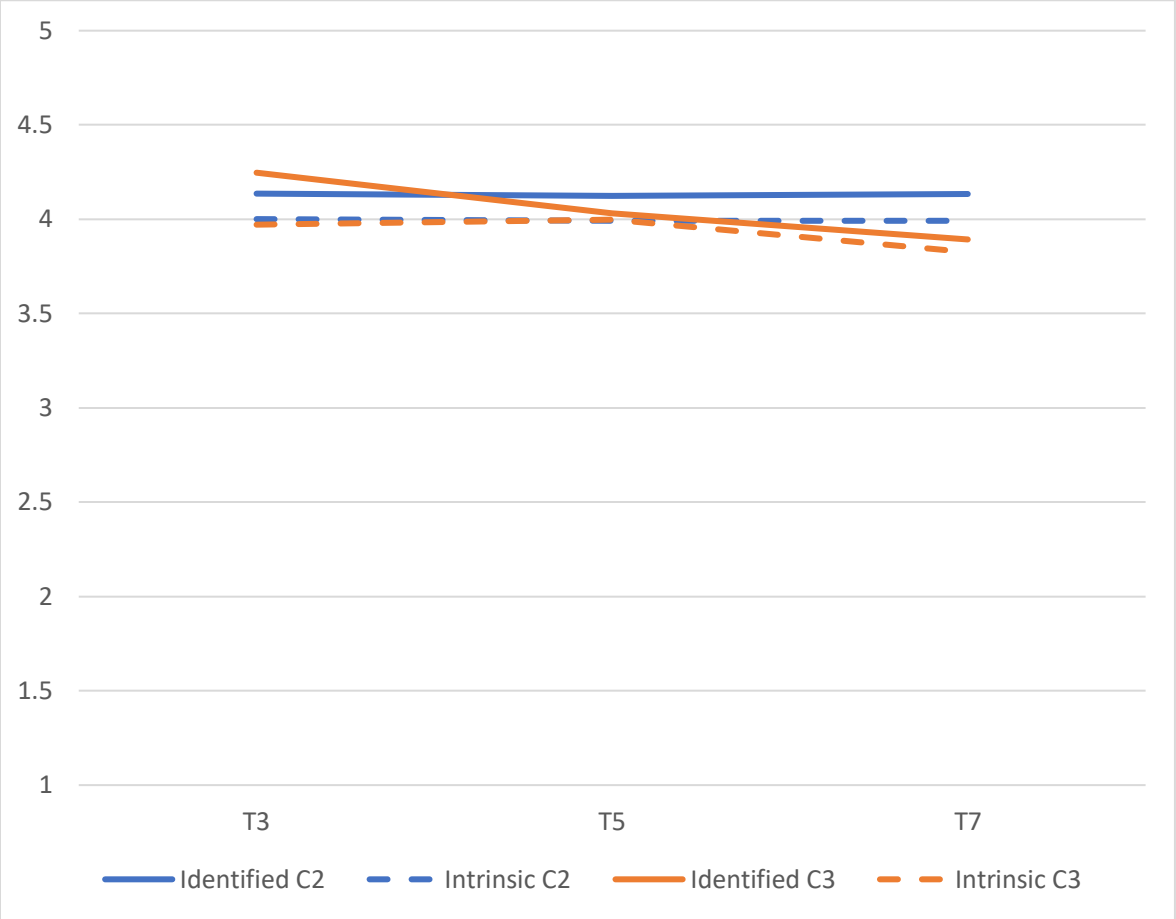


**Figure 3**

*Trajectories of Identified and Intrinsic Motivation by Cohort*




Note: T3 was collected pre-pandemic (December 2019) for Cohort 1, but approximately 10 months into the pandemic (December 2020) for Cohort 2.