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Early Impacts of College, Interrupted: Considering First-Year Students' Narratives About COVID and Reports of Adjustment During College Shutdowns

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Abstract

The COVID-19 pandemic has threatened lives and livelihoods, imperiled families and communities, and disrupted developmental milestones globally. Among the critical developmental disruptions experienced is the transition to college, which is common and foundational for personal and social exploration. During college shutdowns (spring 2020), we recruited 633 first-year U.S. students (mean age = 18.83 years, 71.3% cisgender women) to provide narratives about the impacts of the pandemic. We tested the ways narrative features were associated with concurrent and longitudinal COVID stressors, psychosocial adjustment, and identity development. Narrative growth expressed in spring 2020 was positively associated with psychosocial adjustment and global identity development and was negatively associated with mental health concerns. Associations were supported concurrently and at 1-year follow-up. Growth partly explained associations between COVID stressors and students' adjustment. Our findings reinforce the importance of growth for resilience and underscore the importance of connective reasoning as people navigate a chronic stress.

Keywords

narrative identity, COVID-19, well-being, identity development, mental health, growth, open data, preregistered

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The COVID-19 pandemic has threatened lives and livelihoods globally, impacting the mental, physical, and financial health of millions (Charles et al., 2021; Pelletier et al., 2021). In addition to these broad challenges, we must also consider the more specific challenges faced by particular groups—such as schoolchildren, new parents, and the elderly—moving through specific developmental tasks. Only by understanding how developmental considerations interact with larger sociocultural concerns can we gain a complete picture of the pandemic's ongoing consequences. One developmentally vulnerable group includes first-year college students. For many U.S. adults, college is a time for exploring identity, testing new roles, and nurturing relationships (Booker, Hernandez, et al., 2021; Luyckx et al., 2008; Waters & Fivush, 2015). COVID-related disruptions in navigating these prototypical developmental challenges may exacerbate difficulties during this critical period in forging adult identity and fostering well-being and adjustment. Autobiographical narratives may provide a unique window into understanding how students navigate these challenges and make sense of their COVID-related experiences in ways that are likely related to their adjustment and resilience.

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More specifically, entry into college marks first steps into independence in multiple domains, and the first year of college is prime time for developmentally appropriate experimentation and exploration of beliefs, values, ideals, and commitments, leading to a healthy achieved adult identity (Arnett, 2014; Côté, 2006). The pandemic and resulting lockdown robbed many students of opportunities for independent exploration, potentially leading to higher levels of identity distress and lower psychological well-being. Students who have higher structural levels of risk because of first-generation status or financial instability—those less likely to have social and instrumental supports—may face even greater challenges (e.g., Ishitani, 2006). Personal narratives allow for a phenomenological, ideographic examination of individual meaning-making (Adler et al., 2016) to illuminate what the current generation of college students is facing and reveal particularities of experiences in a diverse group of emerging adults. Substantial research shows that individuals who incorporate structure into their personal narratives, emphasize fundamental motivations in narratives, and integrate life reasoning into narratives have greater psychosocial adjustment, greater investment in processes of identity development, and fewer mental health risks (Booker, Fivush, & Graci, 2021; Booker, Hernandez, et al., 2021; McLean et al., 2020, 2022). As a global pandemic, COVID-19 disrupted everyone's lives and provided an unhappy opportunity to explore how narrative features about a shared cultural experience relate to functioning and well-being during a critical developmental transition, and how the process of meaning-making and its relations to identity and well-being may differ across diverse groups.

Our major objectives were to examine structural, motivational, and integrative expressions of identity work in personal narratives of first-year college students facing the unprecedented challenges of COVID-19. These three domains have been identified as the core components of narrative meaning-making, undergirding coherent narratives that motivate and evaluate human action in ways that connect to understanding of self, other, and the world (McLean et al., 2020). We further addressed how more vulnerable students might differentially express their identity work and how this might be related to their psychological well-being and identity exploration. Although in many ways the challenges of COVID-19 were similar for all college students, it is also true that individuals faced different personal challenges related to factors such as structural vulnerabilities, which first-generation students and financially vulnerable students are more likely to encounter. Thus, we also examined these factors. Finally, we selected self-report measures to assess general psychosocial adjustment, adjustment specific to college (academic belonging and competence), and the status of their identity work.

Statement of Relevance

The COVID-19 pandemic has persisted for multiple years, causing loss of life, shifting how people function daily, and disrupting developmental progress. It is important to understand how these disruptions impact life and functioning. Autobiographical narratives give us a window into the meaning-making process as people experience life events and navigate the pandemic. We focused on a group that was vulnerable, given the developmental importance of the college transition for identity and well-being. We collected undergraduates' narratives about the impacts of COVID-19 as college shutdowns began (spring 2020) and followed these students through the next year of pandemic life. We tested how multiple narrative features were tied to students' adjustment and functioning. Results point to modest but incremental associations between narrative growth—constructive reasoning from past events—and resilient outcomes. This work reinforces the importance of understanding the process of individual meaning-making from lived experience as a critical aspect of resilience.

This multisite study was preregistered on OSF (https://osf.io/49e7w/). Figure 1 presents our conceptual model. At registration, we thought the shutdown would be short-lived and anticipated a short-term follow-up to initial data collection. Unfortunately, this is not what unfolded, and we adapted to collect data over the following year. We report full analyses on the self-report questionnaires elsewhere (Pasupathi et al., 2022). Briefly, we found that COVID-19 stressors were negatively associated with psychosocial adjustment and identity development and positively associated with internalizing and externalizing problems across time. In the current work, we focused on the narratives collected at the first time point in relation to both concurrent and longitudinal (1 year later) well-being and identity work. This focus on two time points, rather than trajectories of change over multiple time points, was based on our attempts to minimize deviations from our preregistration and on limited evidence of linear change for many student outcomes (see Pasupathi et al., 2022).

Hypothesis 1 was that narrative features of structure (i.e., coherence), motivation (i.e., agency), and integration

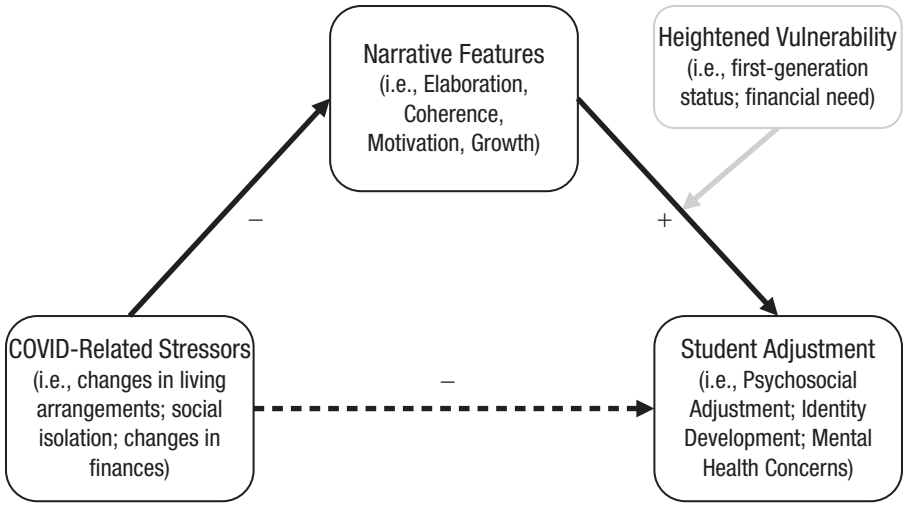

Fig. 1. Conceptual model of research questions and expectations.

(i.e., growth) would be associated with student outcomes. Previous evidence suggests that these features are generally positively associated with adjustment (Booker, Fivush, & Graci, 2021; McLean et al., 2020); hence, we did not make specific hypotheses about differential findings for specific narrative features. We further hypothesized that (a) coherence, agency, and integration would be positively associated with psychosocial adjustment and identity development; (b) coherence, agency, and integration would be negatively associated with mental health problems; (c) associations would be evident concurrently and longitudinally; and (d) associations between narrative features and outcomes may be moderated by indicators of heightened vulnerability (i.e., first-generation status, Pell Grant support).

Hypothesis 2 was that higher narrative expressions of structure, motivation, and integration will be negatively associated with concurrent COVID-19 stressors. Hypothesis 3 was that narrative features will serve as mediators between COVID-19 stressors and student outcomes. Hypothesis 3a was that indirect or mediating effects will be supported concurrently and longitudinally.

Method

Participants

In spring 2020, we recruited 633 first-year college students from multiple U.S. universities (mean age = 18.83 years, *SD* = 1.30) to complete computerized questionnaires and respond to narrative prompts. We attempted to oversample students from historically underserved and excluded backgrounds, including first-generation students, students expressing financial need, and/or students from minority racial and ethnic groups. Most participants were cisgender women (71.3%), followed by cisgender men (27.0%), and genderqueer adults (1.7%). Most participants identified as White (65.9%, n = 409). The remaining participants identified as East or Southeast Asian (7.4%, n = 46), Black (7.4%, n = 46), Latina or Latino (5.5%, n = 34), multiracial (10.5%, n = 66), South Asian (2.3%, n = 14), Middle Eastern (0.6%, n = 4), or Native American/Alaska Native (0.3%, n = 2). Approximately one fifth (21.4%) of students were first generation—neither of their parents or caregivers had completed a 4-year college degree. Approximately one third (32.4%) of students had received Pell Grant assistance during the 2019–2020 academic year. Further, approximately one third of students were currently employed (35.1%), and about half had recently been employed before the pandemic (54.2%). Approximately one third of participants noted changes in their parents' or caregivers' employment status in the last year (29.3%), and approximately one fifth anticipated changes in their families' ability to support their college education as a result of the pandemic (20.3%). At the time of the initial survey, the majority of students lived with their families (89.8%), and very few of the students had been or had family who had been diagnosed with or were recovering from COVID-19 (1.6%). Nearly all students were still enrolled at their current university (98.7%) or were planning to continue their education after transferring to another university (0.5%) during spring 2020.

Procedure

Students were recruited by email from four universities during late spring 2020 (April and May): a private university in the southeastern United States, two public universities in the central United States, and a public

university in the northwestern United States. By this time, in-seat instruction had been suspended at each of these institutions, and students were not allowed to remain in on-campus dormitories without emergency exceptions. Students completed a set of online questionnaires that included a narrative task and survey reports (see below). Procedures took less than 1 hour to complete. Students were compensated with Amazon gift cards (worth $5–$7) across the campuses at baseline. This work was reviewed by the institutional review boards at each institution from which participants were recruited and at a fifth institution with which data and research funding were shared.

With our original preregistration (https://osf.io/49e7w/), established in March 2020, we planned to focus this manuscript on concurrent baseline measures only. This preregistration was partly organized with the expectation that the COVID-19 pandemic's impacts would be shorter lived than has proven to be the case. However, this broader project did involve multiple points of data collection, including additional reports of student psychosocial adjustment, identity development, and mental health at 1-year follow-up. Given the lasting impacts of the COVID-19 pandemic, we added a set of post hoc questions in September 2021 about the ways initial COVID stressors and narrated growth (from spring 2020) may continue to inform student adjustment at 1-year follow-ups (spring 2021). We used the same analyses outlined above to extend our research questions to outcomes at the 1-year follow-up period. We hypothesized that baseline scores of narrative features and COVID stressors would show the same direct, conditional, and indirect associations with follow-up outcomes as with concurrent outcomes. At 1-year follow-up in spring 2021, 335 students returned to complete follow-up measures. As before, most students were cisgender female (71.0%). Again, White students were the largest racial group (68.8%), followed by multiracial (7.5%), Black (7.2%), East or Southeast Asian (6.9%), Latino or Latina (5.7%), South Asian (3.3%), Middle Eastern (0.3%), and Native American/Alaska Native (0.3%) students. The procedures for the 1-year follow-up were nearly identical, with students asked to complete self-reports (detailed below) through online surveys. Students were compensated with $15 Amazon gift cards for their responses at the 1-year follow-up.

Materials

Narrative prompt about the impacts of COVID-19. Students were presented with a narrative prompt asking about the ways COVID-19 had impacted their lives. Part of that narrative prompt is provided below (boldface type is from the original prompt):

> We are interested in knowing more about the impact of Covid-19 **on you and your life**. To best understand your experience, we would first like to ask you to please think about an **event that best captures the challenges you have faced** as a result of Covid-19.
>
> Once you identified this event in your mind, please write everything you remember about this event: what happened, who else (if anyone) was involved, what you did and what others did, and what you thought and felt during the event. Please write as detailed a description of the event so that we can have a sense for what you went through and what it felt like to you.
>
> Also, please tell us why you think you chose this particular event to write about? What does **this event say about who you are, who you were, who you might be**?

Students had as much time and space as needed to respond to this prompt. Narratives were of comparable length with narratives collected in previous college-student samples (mean word count = 168.77, *SD* = 144.84). Narrative topics spanned college-related challenges (i.e., needing to travel to campus from spring break and quickly gather belongings from dorms; challenges with virtual coursework and adequate space/Internet access at home), social challenges and feelings of isolation (i.e., frustration at being cut off from campus friends, romantic partners, family members, community members), worries about own health and family members' health (i.e., mentions of family members' vulnerability status, worries about currently sick or recently passed family members, worries about large gatherings such as weddings), and financial/professional pressures (i.e., losing campus work, losing summer jobs and internships, seeing family businesses or parents' places of business struggling). For many narratives, these topics were not mutually exclusive. An example incorporating multiple themes is shown below:

> No one in my family has gotten sick, thank God. The biggest thing for me, is having to move back home from being at [college]. This is the biggest for me, because yes, it is nice being home with my family, but this meant quarantining away from my boyfriend of over 2.5 years. It's really hard to be away from him for so long. What's even harder is that he lives just a 10-minute drive away, so it'd be so so soooo easy to just drive over and spend time with him. My grandma is 84 and I help take care of her when I'm back home, she lives down

> the street from us. Also, my boyfriend's mom works at a retirement home and his dad is a restaurant cook. So, it'd be really irresponsible for us to like spend time together. We went about 2 months without seeing each other aside from like, I dropped a couple things off at his house and waved from 20 ft away. It's been really hard. At [college] we ate dinner together every night and would walk to our classes together sometimes and hangout as much as possible on the weekends. He's my best friend and life partner and it's been super difficult not getting to spend time with him. It's super hard on me. He's my favorite person on this planet. Anything I do anything, I always think that it would have been funner [sic] with him there or it sucks because I would have liked to have shared that experience with him. I'm glad that we are doing our part, but like, damn, it's so hard. Like last year I was in my senior year of high school and he was a first year at [college] and I live in [city] which is about 2 hours away from [regional area] and even that was easier than this. Because back then we both we living our lives and like were still able to see each other at least like once a month or maybe like once over month and a half. I this says a lot about how important he is to me and in my life. It really shows how much we love spending time together and also how much if a priority he is in my life. Like having a life partner is so very important to me and getting married is something I dream of so much and so to have found like my perfect match and to miss out on so much time we could be spending together really sucks.
>
> *Narrative from a 19-year-old woman*

The example above interweaves many of these themes. Table 1 presents narrative examples that emphasize these different topics.

Narrative coding. Multiple coding teams (typically composed of three or four coding members for each narrative feature) were trained to rate provided narratives for features of elaboration (i.e., factual, interpretive; see Pasupathi & Hoyt, 2009), coherence (i.e., contextual, chronological, thematic; see Reese et al., 2011), motivation (i.e., agency, communion; see Grysman et al., 2016), and reasoning (i.e., growth; see Mansfield et al., 2015). Each of these rating schemes have been successfully used with college adults and capture a range of individual differences among college-age adults (i.e., McLean et al., 2020). Table 2 provides a brief description of each coding scheme as well as interrater reliability for each measure. All narrative coding schemes can be found on OSF at https://osf.io/snjvg/.

Each team built interrater reliability through a series of consensus meetings and then rated remaining narratives independently. Although three scores of coherence were rated for each narrative, there is a recognition that different aspects of narrative coherence are captured by different manual rating schemes (see Vanaken, Bijttebier, Fivush, & Hermans, 2022). Recent projects have reinforced that the three aspects of coherence used in this project are highly correlated (Waters et al., 2019), and previous studies have successfully used the composite of these scores to address research questions (Booker, Fivush, & Graci, 2021). This composite approach was used in the current project. All other narrative features were treated separately in later analyses.

Ratings of narrative features were not significantly correlated with narrative word count (rs = .00 – |.04|). Because word count captures a conceptually distinct aspect of autobiographical memory and does not usually account for shared variance in measures of psychological adjustment alongside narrative measures (i.e., Booker et al., 2020), word count was not considered further.

COVID stressors

Students completed the COVID-19 Related Events Checklist (Kelton & Greenhoot, 2020). This 33-item measure addressed recent COVID-19-related stressors. First, students were asked to indicate whether they had experienced a stressor (sample item, "As a result of COVID-19, I have not been able to see my family"). For each stressor students indicated having experienced, they rated how much stress they perceived on a 4-point scale (1, *not at all stressful*, to 4, *very stressful*). This scale showed acceptable internal consistency (ω = .76).

Psychosocial adjustment

Need fulfillment. Students completed the Psychological Needs Scale (Ryan & Deci, 2000), which captured three subscales of fundamental-need fulfillment pertinent for psychological adjustment: competence, autonomy, and relatedness. This 21-item measure used a 7-point scale (1, *not at all true*, to 7, *very true*; sample item: "I get along with people I come into contact with"). Each subscale showed acceptable to strong internal consistency (ωs = .73–.83).

College self-efficacy. Students completed the College Self-Efficacy Scale (Solberg et al., 1993), which includes

Table 1. Examples of Provided Types of Narratives About COVID-19 Impacts at Spring 2020

Example of a college-related challenge Due to the severity of the covid-19 situation, of course, the learning institutions made students leave campus and continue through online education. This transition made learning a lot more difficult for me. I was now at home where I didn't have all the resources that I previously had or also needed. I got to spend so much time with my family, but it wasn't the same. There was so much missing in order to me to fully succeed as a student. I felt like some professors had given up for their classes. They also had their own lives and families that they had to worry about 24/7 now. It wasn't the same. They didn't have the attention or time to spend with each individual student. Their office hours were uncomfortable. I couldn't meet during one of my class times. I was too busy taking care of family members because some of my family had to continue to work during these times, but nowhere for their kids to go. I had to manage taking care of them throughout the day. I didn't sign up to be a parent, but during those times it felt like was one. I didn't mind it, but I just felt so exhausted. I wanted to be the top student in my class, I wanted to get good grades. But it felt like the world was in chaos, and all I heard were my little cousins fighting and arguing and all I saw was my to do list increasing in size. There was one point where I just gave up on my emails. I couldn't stand it. I would see that the assignments were accumulating or that another lecture video was put out. I was stressed. In the end I was so unhappy with how everything turned out. I felt like I had lost so much of my freshman year. I hated that I couldn't go out for a walk, because everyone was going out for a walk, not practicing social distancing. I just felt confined. At the same time, I felt so guilty. People are losing their lives, their family members, and I was sitting there complaining about losing time.
Example of a social challenge and isolation A few days ago, I hadn't spoken with any of my friends the entire day, whether it was a call or through text. Normally I would talk to them daily for around 3-4 hours. I felt very alone and especially isolated that day because I had tried reaching out, but no one had the time. I consider myself more introverted because I dislike face-to-face contact with others and like being with myself more. I didn't think being alone would make me feel lonely. I realized that I really do enjoy talking to others but had preferred socializing more through the internet because I have low self-esteem and not having to worry about what I look like helps a lot. I would say that this made me realize that I do have the potential to be outgoing more. If I could work on my confidence, then I could get there someday.
Example of worries about health During the week of April 19, my dad started experiencing symptoms of the novel coronavirus—he had a fever, chills, and a cough. My dad told us that three of his co-workers were out with similar symptoms, putting a large strain on him in helping keep the workplace going. He is a minimum wage chef at a small pizza restaurant with 10 employees. All of the workers, including my dad, are undocumented and uninsured, putting an even larger strain on them financially. My family, as a mixed-status family, did not receive any financial compensation as part of the federal CARES Act, and my dad was out of work for two weeks due to the executive order that Gov [name] put in place—before they figured out carryout and delivery options. April 27 my dad went to take a diagnostic test for COVID-19, and we are awaiting the results, expected on Friday, May 1. This anxiety has taken a large toll on my mental health and school productivity, as everyone in my house is now living in fear of being infected—especially as my youngest sibling and I are both experiencing similar symptoms.
Example of financial/professional pressures Amidst the corona outbreak, my mom was laid off from work at the hospital because her being an event coordinator for the breast and colon cancer department, there was no work for her to do. She is the main provider for my family because of my father's disability and inability to work. Thus, speaking I had to move back home because my mom couldn't pay for me to stay at my dorms and find work to help support, thus leaving my dorm and friends I made over the year at [college]. I'm still extremely grateful I am still able to communicate with friends and be a student at [college], but I feel that this event has taken a toll on my family's income and my future as a [college] student.

items on self-efficacy regarding coursework, roommate relations, and other social challenges. The global composite of this measure was used for all analyses. This 20-item measure used a 10-point scale (1, *not at all confident*, to 10, *extremely confident*; sample item: "Make new friends at college"). This scale showed excellent internal consistency (ωs = .90–.92).

College belongingness. Students completed the Belongingness Scale (Hurtado & Carter, 1997) to address perceived belonging in the campus community. This three-item measure used a 12-point scale (0, *strongly disagree*, to 11, *strongly agree*; sample item: "I feel that I am a member of the campus community"). This scale showed excellent internal consistency (ωs = .95–.97).

Well-being. Students completed the short form of the Ryff Well-Being Scale (Ryff & Keyes, 1995). This scale was used to capture a snapshot of broad psychological adjustment reflecting autonomy, environmental mastery, personal growth, positive relations with others, purpose in life, and self-acceptance. Eleven items were completed

Table 2. Summaries of Each Narrative-Feature Coding Scheme

Narrative feature	Measure description and range	Interrater reliability (ICC)	Rationale for a high rating score
Factual elaboration	Global ratings conducted on a scale from 0–3	.94	There are many actions related to the specific event within the narrative, and these actions address rich details (i.e., who, what, where, and how)
Interpretive elaboration	Global ratings conducted on a scale from 0–3	.91	There are many thoughts, emotions, and causal explanations (i.e., because, so, which, hence) incorporated into the narrative
Thematic coherence	Global ratings conducted on a scale from 0–3	.94	The narrative substantially develops a clear topic without deviations and establishes links to other events in the life story
Contextual coherence	Global ratings conducted on a scale from 0–3	.89	The narrative includes mentions of the specific time and place in which the narrated event occurs
Chronological coherence	Global ratings conducted on a scale from 0–3	.92	A vast majority of the event actions can be placed on a clear chronological timeline
Agency	Global ratings conducted on a scale from 0–3	.70	Narrators address ways they showed assertiveness or gained control of the situation in the moment and ways they changed as agentic individuals going forward
Communion	Global ratings conducted on a scale from 0–3	.90	The narrators address ways their relationships to others have explicitly improved, incorporate perspective-taking with another person, or address enduring feelings of care, love, and support toward relationship partners
Growth	Global ratings conducted on a scale from 0–6	.70, .82	The narrators address new knowledge, reasoning, attitudes, behaviors, or personal strengths and resources as a result of the lived event

Note: For growth, there were multiple coding teams working separately and simultaneously. The two intraclass correlation coefficient (ICC) values represent the interrater reliability across these groups. For hypothesis tests, the three scores of coherence (thematic, contextual, chronological) were composited, and a single mean value was used.

on a 6-point Likert scale (1, *strongly disagree*, to 6, *strongly agree*; sample item: "In general, I feel that I continue to learn more about myself as time goes by"). The internal consistency for the scale composite was acceptable (ωs = .69–.70).

Identity development

Students completed the Dimensions of Identity Development Scale (DIDS; Ryan & Deci, 2000). This 25-item measure is composed of five subscales of identity development: commitment making (ω = .89), exploration in breadth (ωs = .82–.85), ruminative exploration (ωs = .78–.80), exploration in depth (ωs = .51–.61), and identification with commitment (ωs = .61–.86). Items were completed on a 5-point Likert scale (1, *strongly disagree*, to 5, *strongly agree*; sample item: "I think about the direction I want to take in my life").

Students also completed the Erikson Psychological Stage Inventory (EPSI) identity subscale (Rosenthal et al., 1981) as a broader measure of identity development. This 10-item scale used a 5-point Likert scale (1, *does not describe me*, to 5, *describes me extremely well*; sample item: "I know what kind of person I am"). Internal consistency was strong for this measure (ωs = .85–.86).

Mental health concerns

Students completed the Counseling Center Assessment of Psychological Symptoms (CCAPS; Locke et al., 2012). The 34-item version of this scale was used to capture seven subscales of mental health: depression, generalized anxiety, social anxiety, academic distress, eating concerns, hostility, and alcohol use. Items were completed on a 5-point scale (0, *not at all like me*, to 4, *extremely like me*; sample item: "I feel sad all the time"). Internal consistencies were acceptable to strong for most subscales (ωs > .72) but were lower than expected for social anxiety (ω = .66), academic distress (ωs = .66–.67), and alcohol use (ωs = .48–.50).

Table 3. Descriptive Statistics Across Recruitment Sites

	Spring 2020		Spring 2021			
Variable	*M*	*SD*	*M*	*SD*	Minimum	Maximum
COVID stressors	3.20	0.49			1.00	4.00
Narrative features						
Factual elaboration	1.77	0.98			0.00	3.00
Interpretive elaboration	1.92	0.83			0.00	3.00
Coherence	2.05	0.67			0.00	3.00
Agency	0.76	0.64			0.00	3.00
Communion	1.38	1.04			0.00	3.00
Growth	2.11	0.68			0.00	6.00
Psychosocial adjustment						
Competence fulfillment	4.74	1.17	4.65	1.19	1.50	7.00
Autonomy fulfillment	3.75	1.17	4.86	1.07	1.43	7.00
Relatedness fulfillment	5.56	0.96	5.38	1.04	1.88	7.00
College self-efficacy	6.12	1.67	5.99	1.56	1.40	10.00
College belongingness	6.96	3.11	5.39	3.28	0.00	11.00
Well-being	4.16	0.68	4.05	0.71	2.18	6.00
Identity development						
Commitment making	3.74	0.90	3.70	0.90	1.00	5.00
Exploration in breadth	3.99	0.72	3.87	0.74	1.40	5.00
Ruminative exploration	3.93	0.59	3.47	0.88	1/00	5.00
Identification commitment	3.64	0.82	3.59	0.85	1.00	5.00
Exploration in depth	3.93	0.59	3.82	0.78	2.00	5.00
EPSI Identity Development	3.56	0.76	3.42	0.78	1.00	5.00
Mental health concerns						
Depression	1.26	0.91	1.16	0.90	0.00	4.00
Generalized anxiety	1.37	0.79	1.36	0.82	0.00	4.00
Social anxiety	1.89	0.77	1.95	0.92	0.00	4.00
Academic distress	1.35	1.12	1.93	1.02	0.00	4.00
Eating disorders	2.16	0.76	1.17	1.10	0.00	4.00
Hostility	0.91	0.74	0.82	0.66	0.00	4.00
Alcohol use	0.85	0.77	0.77	0.76	0.00	4.00

Analysis plan

Preliminary analyses included analyses of variance (ANOVAs) and *t* tests to determine whether students' narrative features differed by gender, racial identity, first-generation status, or Pell Grant eligibility. These *t* tests addressed whether baseline measures differed by study retention.

For each research question, tests were conducted for concurrent and longitudinal outcomes. For Research Question 1 (narrative features will be positively associated with student adjustment) and Research Question 2 (narrative features will be negatively associated with COVID stressors), correlations and regressions were conducted. Correlation *p* values were corrected for multiple tests using Benjamini-Hochberg corrections. Regression estimates ($\alpha = .05$) were tested for bias sensitivity.

For Research Question 3 (narrative features will mediate the associations between COVID stressors and student adjustment), indirect analyses were conducted using R software and a Monte Carlo–based approach for calculating indirect-effect confidence intervals (CIs; Selig & Preacher, 2008). The masked data, R syntax for replicating tests, and .html output file for these analyses are available on OSF (https://osf.io/z2der/).

Results

Preliminary analyses

Descriptive statistics are presented in Table 3 for all measures averaged across recruitment sites. Table 4 provides mean narrative-feature scores split by recruitment site. No analyses were conducted comparing outcomes between different recruitment sites.

Differences in baseline narrative features given demographics. One-way ANOVAs tested whether students' narrative features differed by gender (cisgender male, cisgender female, genderqueer or nonbinary) or

Table 4. Mean Scores for Narrative Features by Recruitment Site

Variable	College 1: Southeastern United States	College 2: Central United States	College 3: Central United States	College 4: Northwestern United States
Factual elaboration	1.85 (0.83)	1.78 (0.85)	1.66 (0.80)	1.90 (1.54)
Interpretive elaboration	1.95 (0.87)	1.79 (0.83)	1.89 (0.82)	2.20 (0.75)
Coherence	2.12 (0.68)	2.06 (0.63)	1.92 (0.67)	2.19 (0.70)
Agency	0.84 (0.53)	0.75 (0.72)	0.73 (0.64)	0.78 (0.48)
Communion	1.44 (1.00)	1.36 (1.07)	1.41 (1.08)	1.29 (0.96)
Growth	2.15 (0.80)	2.10 (0.59)	2.19 (0.70)	1.99 (0.69)

Note: Values in parentheses are standard deviations. Following our preregistration and the broader spirit of this collaborative project, we did not attempt to model comparisons or contrast associations with student outcomes across these recruitment sites.

racial identity (focusing on identities with 10 or more representatives: Asian, Black, Latino, multiracial, White). Independent-samples *t* tests addressed whether students' narrative features differed by first-generation status or by Pell Grant support received in the 2019–2020 academic year.

For gender, students had differences in factual elaboration, $F(2, 614) = 4.63$, $\eta^2 = .02$, $p = .010$; interpretive elaboration, $F(2, 614) = 18.95$, $\eta^2 = .06$, $p < .001$; and communion, $F(2, 616) = 6.39$, $\eta^2 = .02$, $p = .002$. Post hoc Tukey-corrected contrasts showed that cisgender men had lower factual-elaboration scores than cisgender women ($M_{diff} = -.26$, $SE = .09$, $p = .009$); lower interpretive elaboration scores than both cisgender women ($M_{diff} = -.43$, $SE = .07$, $p < .001$) and genderqueer peers ($M_{diff} = -.86$, $SE = .25$, $p < .001$); and lower communion than cisgender women ($M_{diff} = -.33$, $SE = .09$, $p = .001$).

For racial identity, first-generation status, and Pell Grant support in the last year, there were no differences in narrative features ($\alpha = .05$).[1]

Differences in baseline measures given study retention. Independent-samples *t* tests addressed whether participants differed in baseline scores given availability of data at 1-year follow-up. Of the original participants, 335 (52.8%) had available data at 1-year follow-up. Participants did not differ in baseline narrative features. Participants differed in baseline reports of COVID stressors, $t(631) = 4.13$, $d = 0.48$, $p < .001$; college self-efficacy, $t(629) = -2.48$, $d = 1.66$, $p = .015$; DIDS exploration in breadth, $t(630) = 2.23$, $d = 0.71$, $p = .026$; depression, $t(630) = 2.40$, $d = 0.91$, $p = .017$; anxiety, $t(630) = 3.18$, $d = 0.78$, $p = .002$; hostility, $t(630) = 2.24$, $d = 0.74$, $p = .026$; and alcohol use, $t(630) = 3.05$, $d = 0.76$, $p = .002$. Returning student participants had fewer baseline stressors, higher self-efficacy, lower identity exploration, and fewer mental health risks.

Correlational analyses

Bivariate correlations were conducted among narrative and self-report items. Given the large number of correlations, pairwise correlations of narrative features and concurrent self-reports are presented in Table 5. Pairwise correlations with 1-year follow-up self-reports are presented in Table 6. To address possible inflation of Type I errors given multiple correlations, we used Benjamini-Hochberg (1995) *p*-value corrections that formed more conservative significance values. A significance-value cutoff ($p < .05$) was still used for inferences of rejecting (or failing to reject) the null hypothesis. Because of space constraints, 95% CIs for these correlations are presented in Table S1 and Table S2 in the Supplemental Material available online (which show concurrent and longitudinal outcomes, respectively).

Narrated agency and growth were negatively associated with COVID stressors. Most narrative features showed significant and positive associations with other features. Growth was an exception. Growth was not significantly associated with factual elaboration, coherence, or communion. Growth was negatively associated with interpretive elaboration. Last, growth was positively associated with agency.

Both concurrently and at follow-up, COVID stressors were associated with all reports of internalizing and externalizing problems, most reports of psychosocial adjustment, and some reports of identity development (i.e., positive with ruminative exploration, negative with global identity development). With corrections for multiple tests, most narrative features showed a limited number of associations with reports of adjustment, identity development, and mental health concerns. There was an exception for growth: Growth was positively associated with multiple measures of psychosocial adjustment (i.e., need fulfillment, well-being) and identity development (i.e., identity commitment, overall identity

Table 5. Pairwise Correlations of COVID Stressors and Narrative Features With Concurrent Self-Reports

Variable	COVID stressors	Factual elaboration	Interpretive elaboration	Coherence	Agency	Communion	Growth
COVID stressors	—	−.02	−.03	−.02	−.11*	.06	−.14**
Factual elaboration		—	.45**	.52**	.16**	.26**	−.03
Interpretive elaboration			—	.49**	.07	.38**	−.22**
Coherence				—	.15**	.25**	.00
Agency					—	.04	.27**
Communion						—	.03
Psychosocial adjustment							
Competence fulfillment	−.20**	−.02	−.06	−.04	.10*	.05	.18**
Autonomy fulfillment	−.22**	−.06	−.07	.00	.07	.00	.22**
Relatedness fulfillment	−.05	.00	.00	−.02	.07	.11*	.16**
College self-efficacy	−.23**	−.02	−.04	−.02	.04	.07	.14*
College belongingness	.01	−.02	−.04	.04	.02	.11*	.08
Well-being	−.19**	−.03	−.03	−.01	.08	.04	.18**
Identity development							
Commitment making	.00	−.05	−.12*	−.05	.06	.05	.12*
Exploration in breadth	.13	.01	.06	.06	.04	.02	.08
Ruminative exploration	.23**	.01	.11*	.04	−.04	−.05	−.09*
Identification commitment	−.04	−.09	−.15**	−.04	.02	.01	.16**
Exploration in depth	.25**	.03	.04	.04	−.02	.02	.03
EPSI Identity Development	−.21**	−.03	−.07	−.03	.09*	.07	.23**
Mental health concerns							
Depression	.35**	.10*	.10*	.09*	−.12	.01	−.26**
Generalized anxiety	.37**	−.02	.01	.02	−.10	.00	−.17**
Social anxiety	.16**	.09*	.09*	.11*	−.03	−.01	−.13**
Academic distress	.42**	.11*	.15**	.10*	−.08	.06	−.18**
Eating disorders	.35**	.13*	.14*	.10*	−.08	.07	−.19**
Hostility	.32**	.07	.03	−.01	−.11	.03	−.20**
Alcohol use	.31**	.03	−.01	.01	−.09	.02	−.13*

Note: *p* values are corrected for multiple tests using Benjamini and Hochberg (1995) adjustments. Confidence intervals for these correlations are presented in Table S1 in the Supplemental Material. EPSI = Erikson Psychological Stage Inventory.
*$p < .05$. **$p < .01$.

development), and was negatively associated with internalizing and externalizing problems (i.e., depression, academic distress, hostility). These findings were similar across baseline and 1-year follow-up measures.

Regression analyses

Hierarchical regression models tested the ways COVID stressors and narrative features were related to student outcomes against the backdrop of COVID disruptions. Models were conducted in three steps. The first step included dummy codes of gender, considering cisgender male status and genderqueer status, with cisgender female status as the reference group.[2] The second step included COVID stress reports. The third step included all narrative features added simultaneously. Bias-sensitivity analyses were conducted for each stress and narrative-feature estimate supported at the $\alpha = .05$ level, to determine the robustness of inference and whether estimates were at high risk for bias—whether inferences would be changed from rejecting the null hypothesis to failing to reject the null given a modest change in observations. For concurrent measures, the model omnibus was significant for all outcomes except for DIDS exploration in breadth (see Table 7). For follow-up measures, the model omnibus was significant for most outcomes; however, there were exceptions for competence need fulfillment, relatedness need fulfillment, DIDS exploration in breadth, DIDS ruminative exploration, and DIDS exploration in depth (see Table 8). Effect sizes (partial R^2 or f^2) of COVID stressors and narrative features for concurrent outcomes are provided in Table S3 in the Supplemental Material. A set of sensitivity analyses for COVID-stressor and narrative-feature estimates ($\alpha = .05$) for concurrent outcomes is provided in

Table 6. Pairwise Correlations of COVID Stressors and Narrative Features With 1-Year Follow-Up Self-Reports

Variable	COVID stressors	Factual elaboration	Interpretive elaboration	Coherence	Agency	Communion	Growth
Psychosocial adjustment							
Competence fulfillment	−.15*	−.01	−.06	−.05	.01	.04	.13*
Autonomy fulfillment	−.16*	.02	−.01	.00	.00	.03	.18**
Relatedness fulfillment	−.13*	−.01	.04	.00	.03	.11	.15*
College self-efficacy	−.32**	−.06	−.03	.00	.09	.11	.22**
College belongingness	−.20**	.01	−.04	−.03	.07	.09	.18**
Well-being	−.23**	−.09	−.07	−.07	.02	.10	.18**
Identity development							
Commitment making	−.04	−.01	−.15*	−.02	.02	.08	.11
Exploration in breadth	.03	.09	.12	.17**	.05	.08	.02
Ruminative exploration	.14*	.05	.11	.06	−.01	−.05	−.07
Identification commitment	−.06	−.01	−.16*	−.05	.00	.04	.10
Exploration in depth	.09	.10	.05	.07	.07	.00	.05
EPSI Identity Development	−.23**	−.03	−.05	−.01	.04	.08	.19**
Mental health concerns							
Depression	.36**	.09	.05	.05	−.08	−.05	−.18**
Generalized anxiety	.36**	−.02	.01	−.01	−.02	−.03	−.16*
Social anxiety	.19**	.18**	.14*	.00	.01	.01	−.15*
Academic distress	.31**	.09	.17**	.08	−.04	−.01	−.18**
Eating disorders	.30**	.12*	.08	.05	−.03	.01	−.16**
Hostility	.31**	.05	.06	.01	−.03	−.04	−.18*
Alcohol use	.36**	.08	−.01	−.06	−.01	.00	−.10

Note: *p* values are corrected for multiple tests using Benjamini and Hochberg (1995) adjustments. Confidence intervals for these correlations are presented in Table S2 in the Supplemental Material.
*$p < .05$. **$p < .01$.

Table S4 in the Supplemental Material (Rosenberg, 2021). Similarly, model-effect sizes and sensitivity tests for regressions involving longitudinal outcomes are provided in Tables S5 and S6, respectively, in the Supplemental Material.

When we controlled for gender, COVID stressors were significantly associated with most outcomes, concurrently and longitudinally. COVID stressors had negative associations with concurrent competence need fulfillment with competence, autonomy need fulfillment, college self-efficacy, psychological well-being, and global identity development. COVID stressors had positive associations with concurrent DIDS ruminative exploration, DIDS exploration in depth, depression problems, anxiety problems, social anxiety problems, academic distress, eating-disorder problems, hostility, and alcohol use. Similarly, COVID stressors had negative associations with longitudinal autonomy need fulfillment, college self-efficacy, college belonging, psychological well-being, and global identity development. COVID stressors had positive associations with longitudinal DIDS exploration in depth, depression problems, anxiety problems, social anxiety problems, academic distress, eating-concern problems, hostility, and alcohol use.

Effect sizes for statistically significant COVID stressor estimates were small to medium ($f^2 = .013–.149$). Sensitivity analyses suggested that there were few statistically significant estimates that were at high risk for bias. For most estimates involving concurrent and longitudinal outcomes, a considerable proportion of responses would need to be replaced with null values for our inference of rejecting the null hypothesis to be overturned (26.6%–76.8%; see Table S6 and Table S8 in the Supplemental Material). There was one exception involving follow-up social anxiety. Though the regression estimate of COVID stressors was at the $\alpha = .05$ level, it was estimated that replacing 5.95% of observations with null values would change our inference, suggesting there was a higher risk of bias for our estimate.

Beyond gender and COVID stressors, many narrative features provided incremental information for select outcomes concurrently and longitudinally. Factual elaboration did not have significant associations with concurrent outcomes but did have a positive association with longitudinal social anxiety problems. Interpretive elaboration had negative associations with DIDS commitment making and DIDS identification with commitment, both concurrently and longitudinally. Further,

Table 7. Regression Analyses of Concurrent Self-Reports on Gender, COVID Stressors, and Narrative Features

	Independent variable													
	Step 1	Cisgender men	Genderqueer	Step 2	COVID Stress	Step 3	COVID stressors	Factual elaboration	Interpretive elaboration	Coherence	Agency	Communion	Growth	Model
Dependent variable	ΔR^2	β	β	ΔR^2	β	ΔR^2	β	β	β	β	β	β	β	*F*
Psychosocial adjustment														
Competence fulfillment	.01	0.01	−0.09	**.05**	**−0.22**	**.03**	**−0.21**	−0.01	−0.05	−0.04	0.07	0.08	**0.10**	**6.04**
Autonomy fulfillment	.00	−0.03	−0.06	**.06**	**−0.25**	**.04**	**−0.23**	−0.05	−0.05	0.00	0.02	0.02	**0.16**	**7.34**
Relatedness fulfillment	.01	−0.02	**−0.08**	.01	−0.07	**.02**	−0.06	−0.02	−0.02	−0.01	0.04	**0.11**	**0.10**	**2.46**
College self-efficacy	.01	0.07	−0.02	**.04**	**−0.21**	**.02**	**−0.20**	−0.01	−0.04	−0.02	−0.03	**0.09**	**0.11**	**4.95**
College belongingness	**.02**	0.05	**−0.10**	.00	0.03	.01	0.02	−0.03	−0.06	0.01	0.01	**0.13**	0.02	**1.98**
Well-being	.01	0.00	**−0.10**	**.04**	**−0.20**	**.03**	**−0.17**	−0.02	0.01	−0.06	0.03	0.05	**0.15**	**5.65**
Identity development														
Commitment making	.00	−0.03	−0.05	.00	−0.02	**.04**	−0.01	0.01	**−0.11**	−0.09	0.06	**0.09**	0.07	**2.81**
Exploration in breadth	.00	0.01	0.01	**.01**	**0.11**	.01	**0.13**	−0.05	0.10	0.04	0.03	−0.03	0.08	1.75
Ruminative exploration	.00	−0.05	0.04	**.04**	**0.21**	**.03**	**0.22**	−0.03	**0.16**	0.00	0.00	**−0.11**	−0.04	**5.38**
Identification commitment	.01	−0.03	−0.07	.00	−0.07	**.04**	−0.06	−0.01	**−0.12**	−0.08	0.01	0.06	**0.11**	**3.74**
Exploration in depth	**.02**	**−0.13**	−0.04	**.04**	**0.21**	.00	**0.22**	0.01	0.04	0.02	−0.091	−0.03	0.04	**4.50**
EPSI Identity Development	**.01**	0.07	**−0.09**	**.04**	**−0.21**	**.05**	**−0.18**	−0.01	−0.04	−0.05	0.03	**0.10**	**0.17**	**7.65**
Mental health concerns														
Depression	**.03**	**−0.14**	**0.10**	**.12**	**0.35**	**.05**	**0.31**	0.08	0.00	0.06	−0.05	−0.03	**−0.19**	**16.81**
Generalized anxiety	**.05**	**−0.21**	0.05	**.13**	**0.36**	.01	**0.34**	−0.01	−0.02	−0.01	−0.03	−0.01	**−0.08**	**15.40**
Social anxiety	**.02**	**−0.12**	0.08	**.02**	**0.13**	**.02**	**0.12**	0.06	0.02	0.03	0.00	−0.05	**−0.12**	**4.60**
Academic distress	**.02**	**−0.13**	0.07	**.16**	**0.40**	**.04**	**0.39**	0.03	0.09	0.07	−0.03	−0.02	**−0.11**	**18.74**
Eating disorders	**.05**	**−0.20**	0.06	**.10**	**0.33**	**.03**	**0.31**	0.07	0.03	0.08	−0.04	0.00	**−0.10**	**14.75**
Hostility	.01	−0.01	**0.09**	**.11**	**0.33**	**.03**	**0.30**	0.09	−0.03	−0.02	−0.05	0.03	**−0.14**	**11.22**
Alcohol use	**.02**	**−0.14**	0.04	**.09**	**0.30**	.01	**0.28**	0.06	−0.05	−0.03	−0.04	0.02	−0.06	**9.02**

Note: Boldface values are significant (α = .05). For gender, cisgender women were the reference group. Variance inflation factors were less than 2.00 for all independent variables. Effect sizes (partial R^2 or f^2) for each model effect are presented in Table S3 in the Supplemental Material. Bias-sensitivity analyses for each regression estimate (α = .05) level are presented in Table S4 in the Supplemental Material. EPSI = Erikson Psychological Stage Inventory.

Table 8. Regression Analyses of Follow-Up Self-Reports on Gender, COVID Stressors, and Narrative Features

	Independent variable												
	Step 1	Cisgender men	Step 2	COVID Stress	Step 3	COVID Stressors	Factual	Interpretive elaboration	Coherence	Agency	Communion	Growth	Model
Dependent variable	ΔR^2	β	ΔR^2	β	ΔR^2	β	β	β	β	β	β	β	*F*
Psychosocial adjustment													
Competence Fulfillment	.00	0.00	**.03**	**−0.17**	.02	**−0.16**	0.03	−0.06	−0.04	−0.02	0.06	0.11	2.06
Autonomy fulfillment	.00	−0.03	**.04**	**−0.21**	.02	**−0.18**	0.03	−0.01	−0.02	−0.05	0.01	**0.14**	**2.52**
Relatedness fulfillment	.00	−0.01	**.02**	**−0.15**	.03	−0.12	−0.03	0.05	−0.03	−0.01	0.10	**0.14**	2.00
College self-efficacy	.01	0.07	**.09**	**−0.31**	**.05**	**−0.27**	−0.06	−0.03	−0.01	0.03	**0.15**	**0.16**	**6.74**
College belongingness	.00	0.02	**.04**	**−0.19**	**.04**	**−0.16**	0.04	−0.03	−0.07	0.02	**0.12**	**0.15**	**3.31**
Well-being	.00	−0.01	**.06**	**−0.26**	**.05**	**-0.23**	−0.06	−0.05	−0.07	−0.01	**0.14**	**0.14**	**4.92**
Identity development													
Commitment making	.00	−0.06	.00	−0.06	**.05**	−0.07	0.04	**−0.25**	0.04	0.02	**0.13**	0.04	**2.51**
Exploration in breadth	.00	0.01	.00	0.01	.03	0.03	0.02	0.03	0.13	0.02	0.04	−0.01	1.27
Ruminative exploration	.00	−0.01	**.02**	**0.15**	.03	**0.16**	0.00	**0.16**	0.00	−0.01	−0.11	−0.01	1.95
Identification Commitment	.00	−0.04	.01	−0.07	**.05**	−0.09	0.06	**−0.25**	0.02	0.01	0.10	0.03	**2.27**
Exploration in depth	.00	−0.05	.01	−0.04	.02	**0.10**	0.07	0.03	0.01	0.05	−0.04	0.06	0.99
EPSI Identity Development	.01	0.08	**.07**	**−0.26**	.03	**−0.24**	−0.01	−0.06	−0.01	−0.01	0.10	**0.13**	**4.41**
Mental health concerns													
Depression	**.01**	**−0.12**	**.14**	**0.38**	.03	**0.36**	0.06	0.03	0.05	−0.05	−0.09	−0.09	**8.61**
Generalized anxiety	**.04**	**−0.20**	**.14**	**0.38**	.01	**0.36**	−0.05	0.01	0.01	0.03	−0.04	−0.07	**8.98**
Social anxiety	**.02**	**−0.15**	**.02**	**−0.13**	**.05**	**0.12**	**0.15**	0.04	0.00	0.05	−0.04	**−0.16**	**4.34**
Academic distress	**.01**	−0.10	**.09**	**0.30**	**.05**	**0.29**	0.02	**0.17**	0.01	−0.01	−0.08	−0.11	**6.75**
Eating disorders	**.02**	**−0.14**	**.10**	**0.32**	.02	**0.30**	0.10	0.04	0.00	0.00	−0.02	−0.08	**6.20**
Hostility	.00	**−0.03**	**.10**	**0.32**	.03	**0.30**	0.03	0.08	0.00	0.01	−0.07	−0.12	**5.51**
Alcohol use	**.01**	−0.08	**.13**	**0.37**	.01	**0.36**	0.10	0.01	−0.10	0.03	−0.01	−0.03	**7.11**

Note: Boldface values are significant (α = .05). For gender, cisgender women and genderqueer students were a collective reference group compared with cisgender men because fewer genderqueer participants were available at follow-up. Variance inflation factors were less than 2.00 for all independent variables. Effect sizes (partial R^2 or f^2) for each model effect are presented in Table S5 in the Supplemental Material. Bias-sensitivity analyses for each regression estimate at the α = .05 level are presented in Table S6 in the Supplemental Material.

interpretive elaboration had positive associations with DIDS ruminative exploration, both concurrently and longitudinally. Agency did not have significant associations with concurrent or longitudinal outcomes. Communion had positive associations with concurrent relatedness need fulfillment, college self-efficacy, college belonging, DIDS commitment making, and global identity development. Communion had a negative association with concurrent ruminative exploration. Similarly, communion had positive associations with longitudinal college self-efficacy, college belonging, psychological well-being, and DIDS commitment making.

Broadly, growth was positively associated with psychosocial adjustment during early disruptions to the college experience (spring 2020) and at later follow-up (spring 2021). Growth had positive associations with concurrent competence need fulfillment, autonomy need fulfillment, relatedness need fulfillment, college self-efficacy, psychological well-being, DIDS identification with commitment, and global identity development. Growth had negative associations with concurrent depression problems, anxiety problems, social anxiety problems, academic distress, eating-concern problems, and hostility. Similarly, growth had positive associations with longitudinal autonomy need fulfillment, relatedness need fulfillment, college self-efficacy, college belonging, psychological well-being, and global identity development. Growth had negative associations with longitudinal social anxiety problems.

The effect sizes for all significant narrative-feature estimates were small (f^2 = .007–.035). There were some significant narrative-feature estimates that were at higher risk for bias. Concurrently, the estimate of interpretative elaboration for DIDS commitment making, the estimates of communion for college self-efficacy and DIDS commitment making, and the estimate of growth for anxiety problems were at higher risk of bias, as a replacement of fewer than 10% of observations with null values would change our inference from rejecting the null hypotheses to failing to reject the null hypothesis (we would expect a change in inference given a 3.0%–8.8% change in observed values). Longitudinally, the estimate of interpretive elaboration for DIDS ruminative exploration, the estimate of communion for college belonging, and the estimate of growth for global identity development were at higher risk for bias (we would expect a change in inference given a 4.5%–8.3% change in observed values).

Moderation analyses

We considered whether the associations between narrative features and student outcomes would be moderated by historical indicators of greater challenge for students (i.e., first-generation status, financial need). We formed a single indicator of heightened risk depending on whether students had first-generation status or received Pell Grants during the academic year. Over one third of students (38.7%) met the criteria for this indicator. Heightened vulnerability was not associated with student gender, $\chi^2(2, N = 630) = 3.19$, $p = .203$, but was associated with racial identity, $\chi^2(4, N = 630) = 47.83$, $p < .001$. Black, Latino, and White students in this sample were more likely to have indicators of heightened vulnerability compared with their Asian and multiracial peers.

To minimize the number of moderation analyses, we focused on possible effects involving the independent variable of narrated growth. For each outcome, we conducted a regression model with standardized and centered main effects of narrated growth and heightened vulnerability, as well as an interaction term between these two variables. All previous model effects (i.e., gender, COVID stressors, other narrative features) were retained as covariates. One significant interaction effect was supported among concurrent measures, involving the dependent variable of college self-efficacy (estimate = 0.23, SE = 0.08, f^2 = .007, p = .005). For students with indicators of heightened vulnerability, greater narrative growth was associated with a larger positive association with self-efficacy (see Fig. 2). One significant interaction effect was supported among follow-up measures, involving the dependent variable of DIDS identification commitment (estimate = −0.28, SE = 0.11, f^2 = .014, p = .009). For students with heightened vulnerability markers, the association between growth and commitment 1 year later was negative, whereas this association was positive for students who did not indicate additional vulnerability (see Fig. 3). We caution that these interaction effects were at higher risk for bias using model-level sensitivity tests; a replacement of fewer than 10% of observations with null values in either model would change our inference for rejecting the null hypothesis. Additional replications will be needed to clarify support for these interactions.

Indirect-effects tests

To address Research Question 3 (narrative features should explain part of the association between COVID stressors and student outcomes), we tested for indirect effects. We focused on growth as an intervening variable, because it showed (a) correlations with COVID stressors and (b) correlations with other self-reports. We used a Monte Carlo–based approach to testing for indirect effects given *a*-path effects of COVID stressors on narrated growth and *b*-path effects of growth onto each outcome (Selig & Preacher, 2008). Gender and all other narrative features were controlled as covariates for these

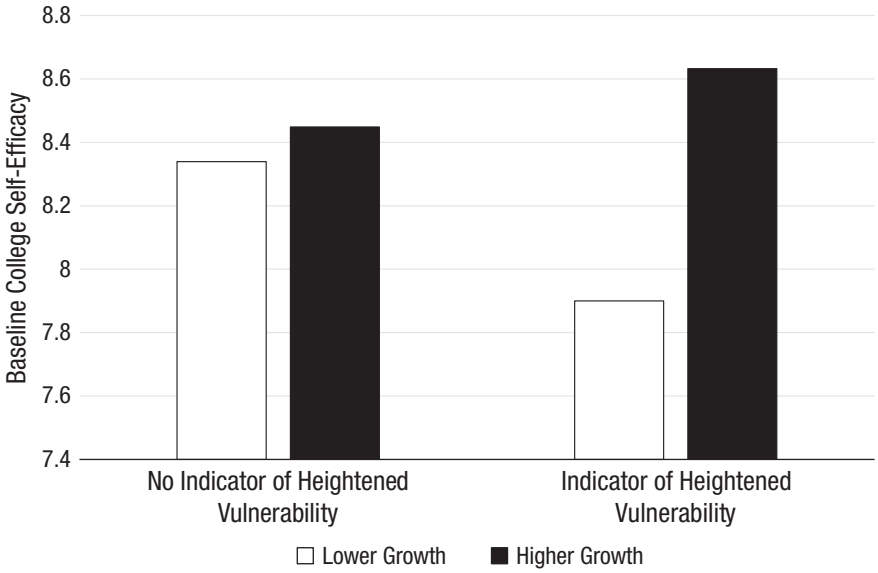

Fig. 2. Estimates of baseline college self-efficacy by expressed narrative growth and indicators of heightened vulnerability. Estimates assume starting values for cisgender women who had scores of 0 for all other narrative features and reports of COVID stressors. Estimates for growth are for −1 *SD* below the mean and +1 *SD* above the mean.

estimates. Models formed 95% CIs for indirect effects using 20,000 bootstrapped repetitions. Table 9 presents the CIs for each indirect test conducted concurrently (spring 2020) and at 1-year follow-up (spring 2021).

Growth was a significant intervening variable for many outcomes (the 95% CI did not include zero). Concurrently, growth was supported as an intervening variable for competence need fulfillment, autonomy need fulfillment, relatedness need fulfillment, college self-efficacy, psychological well-being, DIDS identification with commitment, global identity development, depression problems, anxiety problems, social anxiety, academic distress, eating-disorder problems, and hostility. Longitudinally, growth was supported as an intervening

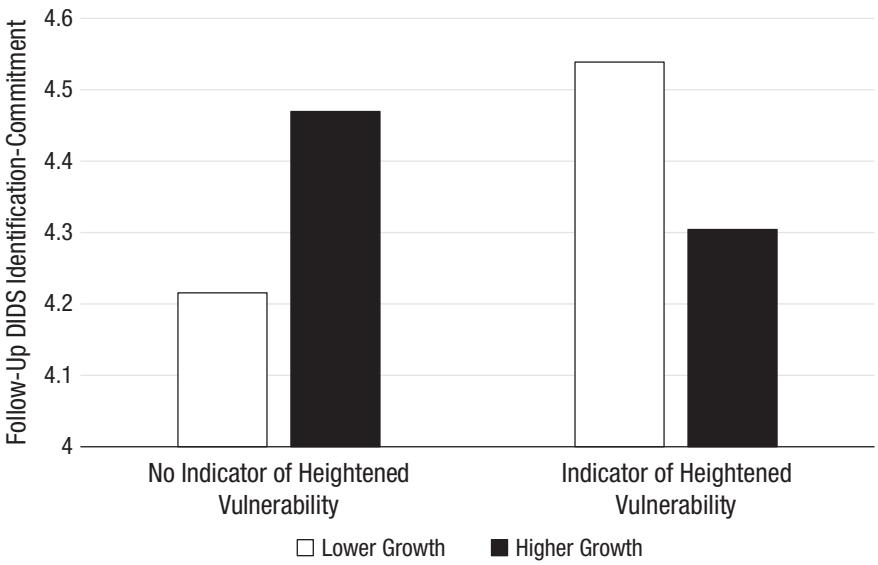

Fig. 3. Estimates of follow-up Dimensions of Identity Development Scale (DIDS) identification commitment by expressed narrative growth and indicators of heightened vulnerability. Estimates assume starting values for cisgender women or genderqueer participants who had scores of 0 for all other narrative features and reports of COVID stressors. Estimates for growth are for −1 *SD* below the mean and +1 *SD* above the mean.

Table 9. Indirect-Effect 95% Confidence Intervals of Baseline COVID Stressors to Concurrent (Spring 2020) and Follow-Up (Spring 2021) Self-Reported Outcomes, via Baseline Narrated Growth

Dependent variable	Spring 2020	Spring 2021
Psychosocial adjustment		
Competence-need fulfillment	**[−.090, −.006]**	[−.112, .008]
Autonomy-need fulfillment	**[−.113, −.030]**	**[−.117, −.008]**
Relatedness-need fulfillment	**[−.080, −.030]**	**[−.112, −.005]**
College self-efficacy	**[−.134, −.013]**	**[−.181, −.021]**
College belongingness	[−.133, .080]	**[−.375, −.033]**
Well-being	**[−.070, −.015]**	**[−.077, −.006]**
Identity development		
Commitment making	[−.059, .004]	[−.059, .028]
Exploration in breadth	[−.049, .002]	[−.033, .038]
Ruminative exploration	[−.014, .044]	[−.038, .048]
Identification commitment	**[−.068, −.006]**	[−.050, .031]
Exploration in depth	[−.029, .010]	[−.043, .016]
EPSI Identity Development	**[−.085, −.022]**	**[−.081, −.001]**
Mental health concerns		
Depression	**[.031, .107]**	[−.008, .086]
Generalized anxiety	**[.001, .053]**	[−.014, .061]
Social anxiety	**[.011 .081]**	**[.013, .108]**
Academic distress	**[.012, .082]**	[−.002, .098]
Eating disorders	**[.009, .086]**	[−.015, .091]
Hostility	**[.014, .069]**	**[.001, .006]**
Alcohol use	[−.007, .044]	[−.026, .046]

Note: Independent variable represents COVID stressors. Gender and all remaining narrative feature themes were entered as covariates. Bolded values indicate 95% confidence intervals that did not include the value of zero. These confidence interval findings were interpreted as statistically significant at the $\alpha = .05$ level.

variable for autonomy need fulfillment, relatedness need fulfillment, college self-efficacy, college belonging, psychological well-being, global identity development, social anxiety problems, and hostility.

Discussion

To fully comprehend the magnitude of the consequences of the pandemic, we must examine broad-based effects in the context of developmental and structural factors that create variation in individual outcomes. The transition to college is one such developmental transition. It is marked by exploration, personal discovery, and a sense of fulfillment—aspects threatened by the COVID pandemic. Against the backdrop of this pandemic, first-year students' narrated expressions of growth were associated with multiple domains of student adjustment, concurrently and longitudinally. Associations included positive ties to psychosocial adjustment, positive ties to identity commitment and overall identity development, and negative ties to mental health risks. Growth also partly explained many of the associations between baseline reports of COVID stressors and students' reports of adjustment and functioning. Our key findings reinforce the potential for constructive autobiographical reasoning for young adults' resilience during a chronic collective stressful event.

Previous research has shown that narrative meaning-making is relevant for adults' subsequent psychological adjustment and functioning across nonclinical settings (McLean et al., 2022), trauma-exposed settings (Booker et al., 2020), and clinical settings (Adler, 2012). Our results extend these findings by demonstrating that emerging adults' narratives about current challenging experiences are related to their adjustment even while those events are unfolding.

We found few direct associations between narrative features and COVID stressors. Agency and growth were negatively associated with stressors, suggesting that students who reported numerous COVID impacts on their lives were less likely to reflect on how pandemic challenges might spur personal growth. In contrast, structural features (i.e., elaboration, coherence) were not related to COVID stressors. Narrative structure reflects the very foundations of storytelling (see Fivush et al., 2017), so coherence may be a foundational narrative

skill that varies individually but is not disrupted by specific stressful events. In support of this interpretation, individual differences in narrative structure assessed 2 years prior to the COVID-19 pandemic continued to predict young adults' coherence in narratives about COVID (Vanaken, Bijttebier, & Hermans, 2021). Although coherence may be quite consistent across individuals' narration of different experiences, it is inconsistently related to outcome.

Among considered narrative features, growth showed the most associations with psychological adjustment. As with previous work (Booker, Fivush, & Graci, 2021; Mansfield et al., 2015; McLean et al., 2020), the narration of growth was associated with greater need fulfillment and personal flourishing, broad advances in identity development, and fewer internalizing and externalizing problems. Further, growth partly accounted for associations between COVID stressors and many self-report outcomes. A similar—though modest and preliminary—picture emerges when considering how benefits of growth may interact with vulnerability factors. Students with vulnerabilities may show stronger benefits of narrative growth in short-term college confidence and preparedness—factors that could encourage college retention. For these students, positive expectations about their outlook (i.e., educational, social, health) could be especially beneficial in the face of major stressors (Ishitani, 2006). However, given the chronic nature of the pandemic, the benefits of early optimism and reasoning may not be sufficient for long-term adjustment (see Fig. 3). Further, these differences could reflect additional individual differences (i.e., optimism) and fit with environmental expectations for cultural norms of storytelling and telling the "right" story, which could explain some of our current findings. These personal and cultural factors deserve additional consideration.

Though modest, the incremental and systematic findings involving growth are in line with work by Adler and Poulin (2009), who studied U.S. middle-age adults' narratives 2 months after 9/11. Their work showed well-being benefits of narrative redemption or of finding positive resolution following negative events, particularly for those with more exposure to the events of 9/11. This study also showed the direct benefits of narrative closure for participants, which was not available to many participants because, at the time of data collection, the pandemic was ongoing. Our plan to continue to collect data from these participants will help us understand how long-term culturally shared stressors begin to take on canonical narrative forms that facilitate meaning and closure.

Although growth informed concurrent and longitudinal resilience, other narrative features were less consistent. Some features, such as communion, showed select positive associations (see also Booker, Hernandez, et al., 2021). Surprisingly, *interpretive elaboration*—a means of detailing life stories with reflections on past thoughts, feelings, and goals (Pasupathi & Hoyt, 2009)—was associated with lower identity commitment, greater ruminative identity exploration, and greater mental health risks. Interpretive elaboration is posited to be broadly constructive across life events, and recent findings suggest that elaboration in trauma-centered narratives is complementary to psychological health (Booker et al., 2020). The minimal associations of narrative coherence with adjustment, identity, and mental health were also surprising. Coherence involves organizing a lived experience in ways that are critical for understanding the event and communicating its details (Fivush et al., 2017; Reese et al., 2011). Other narrative projects, collecting young adults' autobiographical experiences against the backdrop of COVID, have found narrative coherence to be related to psychological well-being, mental health concerns, and recent stress (Vanaken, Bijttebier, Fivush, & Hermans, 2022).

However, there is a major distinction between our project and others: We asked about an ongoing stressor. Other recent projects have asked about broader life-story events (i.e., a low-point experience from across the life span), and these events may have reached a clear resolution, for better or worse, rather than remaining dynamic and ongoing. This pandemic has been an enduring, thoroughly disruptive, and as yet unresolved, phenomenon—impacting social life, academic and employment opportunities and demands, physical and mental health, and financial standing for many young adults, their families, and their communities. Attempting to elaborate about one's thoughts, values, and goals "in the midst of the storm" may actually reflect ruminative reasoning for some individuals and thus may reflect disrupted positive identity exploration. Indeed, in some studies, interpretive elaboration is associated with forms of negative reasoning and greater recognition of event distress for young adults (Graci et al., 2018). Purposeful qualitative exploration of the narratives will help elucidate these findings.

Although we initially recruited for a highly diverse sample, our recruitment efforts were not completely successful. Initial participants were predominantly White and cisgender female, and the sample was further limited by differences in attrition given baseline scores. Additional biases may have occurred during initial recruitment; for example, extremely distressed students may not have had the interest or the energy to participate in this project. Still, we benefited from a timely effort to recruit students from different types of college institutions and geographic regions. Future work will benefit from considering longitudinal, within-person variability in narrative features

and the importance of such variance for psychological adjustment and functioning. Understanding what enables some individuals to narrate with growth in mind even amid the unfolding challenges of a pandemic may illuminate narrative paths to resilience.

Transparency

Action Editor: Paul Jose
Editor: Patricia J. Bauer
Author Contributions

This project was first conceptualized by R. Fivush, A. Follmer Greenhoot, K. C. McLean, C. Wainryb, and M. Pasupathi. All the authors contributed to the final design and execution of the project. All the authors contributed to coding work and coding-team management. All the authors provided input on the organization of the preregistration, and K. C. McLean uploaded it. J. A. Booker led data analysis. All authors revised the manuscript and approved the final version for submission.

Declaration of Conflicting Interests

The author(s) declared that there were no conflicts of interest with respect to the authorship or the publication of this article.

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Open Practices

All data and analysis code have been made publicly available via OSF and can be accessed at https://osf.io/z2der/. The design and analysis plans for the study were preregistered at https://10.17605/osf.io/49e7w/. This article has received the badges for Open Data and Preregistration. More information about the Open Practices badges can be found at http://www.psychologicalscience.org/publications/badges.

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Supplemental Material

Additional supporting information can be found at http://journals.sagepub.com/doi/suppl/10.1177/09567976221108941

Notes

1. Some students (26.8%) indicated that they did not know whether they had received Pell Grant assistance during the academic year. For this analysis, these students were treated as not having received such assistance.
2. Because of the limited number of genderqueer individuals available at 1-year follow-up ($n = 5$), only the dummy code for cisgender men was entered in this model; we considered cisgender women and genderqueer participants as the reference group of comparison. Cisgender women's self-report scores were closer to the reports of genderqueer participants than to those of cisgender male participants.

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