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Generation Z undergraduate students' resilience during the COVID-19 pandemic: a qualitative study

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Abstract

Resilience has been documented as an essential component in managing stress. However, understanding how undergraduate students with different sociodemographic characteristics perceive resilience remains understudied. This study aimed to explore how undergraduate students in one university define and build resilience during the COVID-19 pandemic. Students' perception and preferences for receiving resilience training were additionally solicited. A descriptive qualitative cross-sectional study was conducted. Twenty-seven students were interviewed using a semi-structured interview guide via Skype instant messaging. The thematic analysis generated five themes: resilience as enduring and withstanding; the building blocks of resilience; resilience: learning or earning; pedagogical considerations for resilience training; and a blended platform for resilience training. Participants described resilience as an enduring and withstanding trait essential for university students. Resilience can be built from intrinsic and extrinsic factors. Intrinsic factors that enhanced resilience included desire to succeed and motivation. Extrinsic factors were relational in nature, and friends, family, teachers, and religion were found to boost resilience. Students had several recommendations in designing resilience training, and they recommended the use of a blended platform. Further, students suggested the use of videos, narratives from resilient individuals, and using reflective practice as a pedagogy in resilience training. Future resilience training should consist of personal and interpersonal factors and should be introduced early during the academic term of students' university life. As the COVID-19 pandemic compounds an already challenging academic climate, this study lends it findings to expand the resilience literature and develop future resilience training.

Keywords COVID-19 · Qualitative · Resilience · Resilience training · Undergraduate students

Introduction

Academic adversities and challenges ranging from school, financial, to relational issues are common among undergraduate students (Cameron & Rideout, 2020; Mall et al., 2018; Ramachandiran & Dhanapal, 2018). Moreover, stress among undergraduate students is experienced in two simultaneous life transitions as an emerging adult (Arnett, 2000) and adjusting to college life (Bland et al., 2012), which may lead to deleterious effects on their academic performance and mental health (Leppink et al., 2016).

Importance of Resilience among Undergraduate Students

Academic resilience refers to a student's ability to overcome academic adversities that can influence students' educational development (Cassidy, 2016; Martin, 2013). With reference to resilience theory (Van Breda, 2018), appreciating how resilience takes shape involves three connected components,

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namely, (1) adversity, (2) mediating process, and (3) outcome. Understanding adversity is critical in appreciating how resilience plays out, given that resilience is described as an ability to either bounce back from adversity or how one copes in the face of adversity (Bonanno & Diminich, 2013; Van Breda, 2018). In relation to coping abilities, resilience theory describes individual (problem-solving skills, emotions, motivation), social (interpersonal relationships), or environmental (infrastructure or school facilities) factors that augment or mediate an individual's resilience (Hartling, 2008; Masten, 2015; Van Breda, 2018). As one encounters adversity and following interactions and support from either individual, social, or environmental resources, he/she may then become resilient (Van Breda, 2018). Resilient students are characterized by their ability to utilize resources or seek help to mitigate the challenges and excel in their academic pursuits (Ainscough et al., 2018; Lessard et al., 2014). Intrinsic values, such as strength, determination, future orientation, coupled with the development of a sense of belonging and social support, were found to be the qualities of resilient students (Azmitia et al., 2018; Bailey, 2020).

Undergraduate students are increasingly made up of Generation Z, which is defined as individuals born between 1995 and 2010 (Seemiller & Grace, 2017) who present different attitudes, expectations, strengths, and weaknesses from previous generations (Seemiller & Grace, 2016; Shatto & Erwin, 2016). Generation Z students have fixed ideation of their self-worth influenced by the self-esteem movement (Dweck, 2015). In addition, Generation Z students are associated with higher narcissism, over-confidence, aversion to negative events, and a focus on praises and high grades (Twenge, 2013). These students are thought to be "bubble-wrapped" due to helicopter parenting (Talmon, 2019), which may lead to poor academic or career outcome (Bradley-Geist & Olson-Buchanan, 2014). Given that resilience is proposed to be developed through exposure to adversity (Luecken & Gress, 2009), Generation Z students have potentially lesser resilience owing to the lack of exposure to adversity due to helicopter parenting and their general aversion to risk and negative events. Hence, exploring the concept of resilience among these group of students from different university faculties is essential.

Impact of COVID-19 Pandemic on Students and Educational Institutions

The COVID-19 pandemic led to lockdowns and containment measures across the globe (Alvarez et al., 2020; Ilesanmi & Afolabi, 2020; Lee et al., 2020). Given the profound changes in all aspects of everyday life and its deleterious impact on students' academic and mental health, the COVID-19 pandemic may present as a significant adversity for students (Okunlola et al., 2020). Consequently, due to these changes in their everyday lives, students have experienced greater frequency and severity of psychological distress, such as increased anxiety and depressive symptoms, adaptation of maladaptive behaviors, and poor sleep quality (Charles et al., 2021; Marelli et al., 2021; Tang et al., 2020). Collectively, these changes led to students experiencing post-traumatic disorders, suggesting that COVID-19 measures have led to trauma among students (Tang et al., 2020).

With regard to the impacts on educational institutions, the need for strict social distancing and quarantine measures have highlighted that the traditional mode of delivering knowledge is no longer feasible (Alvarez et al., 2020; Bouali et al., 2020). Schools around the world were presented with logistical and practical challenges as students transition to online learning platforms (Bouali et al., 2020). COVID-19 measures were enforced during the academic term in most universities and caused compounding disruptions in students' traditional learning modes (face-to-face and group discussions) (Rose, 2020; Shenoy et al., 2020).

The COVID-19 pandemic has pressured educational institutions at an unprecedented pace to adopt and enhance digital readiness (Zalite & Zvirbule, 2020; Antonopoulou et al., 2021). Traditional face-to-face learning has been replaced by online platforms, and exploring alternative methods of delivering knowledge has become an urgent matter. As technologically savvy students prefer learning via digital platforms (Zalite & Zvirbule, 2020), how students utilize such platforms on their own initiatives for learning needs to be understood (Deng & Tavares, 2015). As online platforms may be delivered in different formats, features, time point, course duration, start date, and type of interactivity, sustaining interest and completing assigned tasks have become a challenge to students (Jordan, 2015). In addition, the completion of online courses requires varied levels of participation and motivation (Bliuc et al., 2010; Castle & McGuire, 2010). Individuals who are motivated and equipped with good self-regulation skills perform better over online platforms (Salmon et al., 2017; Swan, 2005). Hence, designing online platforms requires a user-centered approach by drawing attention to students' learning preferences; this approach can aid in optimizing features and components while aligning with participants' expectations and motivations, as well as improve students' completion and learning (Salmon et al., 2017).

Learning Preferences in Designing Resilience Training

Learning preferences refer to the methods used in the process of learning, and these methods include the way students concentrate, process, and obtain information, knowledge, or experience (Othman & Amiruddin, 2010). Understanding learning preferences can be a potential strategy to design resilience surrounding students' needs, as this approach acknowledges that students are inherently different and have unique learning

preferences. The Visual, Aural, Read/write, and Kinesthetic (VARK) model provides a framework to classify students into four different learning modes (Fleming, 2006). These modes, namely, visual, aural, read, and kinesthetic, are based on an individual's preferred senses in gathering information (Fleming, 2006; Othman & Amiruddin, 2010). Visual students learn by interpreting charts, graphs, pictures, and descriptions. In the aural mode, students learn by listening to teachers, discussing, and learning from others. Individuals who learn best by interpreting textual information and taking notes belong to the reading mode. Kinesthetic learners use senses, such as touching, seeing, and listening, and they prefer experiential learning modes (Fleming, 2006). These learning modes highlight the various learning processes that students adopt to learn. In addition, teaching materials should be developed according to students' learning preferences to improve learning outcomes (Othman & Amiruddin, 2010; Pritchard, 2005). Hence, understanding students' learning preferences of receiving resilience training is essential to design quality interventions.

To the authors' knowledge, information for developing resilience training from a user-centered design is limited. Given the numerous inconsistencies in the definition of resilience, contents and regime used in existing resilience trainings vary (Brewer et al., 2019; Kunzler et al., 2020; Sanderson & Brewer, 2017); hence, the resilience enhancing strategies from students' perspectives need to be ascertained. Furthermore, new changes and challenges arising from extenuating circumstances due to COVID-19 suggest a need to review the contents of existing resilience training to ensure that they continue to bring about the positive effects they endeavor. Although existing resilience training programs, which are primarily delivered face-to-face, are effective (Joyce et al., 2018; Kunzler et al., 2020), their positive effects may now be limited due to the COVID-19 pandemic. Thus, understanding how a shift to other teaching and learning platforms that could yield an equivalent or even a superior outcome is needed.

Moreover, existing resilience training programs are curated differently (Brewer et al., 2019; Kunzler et al., 2020; Sanderson & Brewer, 2017). With limited evidence, discerning which platform (online or face-to-face) leads to a better learning outcome will be challenging. Given that online platforms will likely be universities' main mode of delivery and they are a new platform for delivering resilience training among students, a co-production between researchers and recipients is necessary to maximize the effectiveness of an intervention (Salmon et al., 2017; Wight et al., 2016).

For the above reasons, revisiting undergraduate students' experience during COVID-19 pandemic is timely, as well as their suggested strategies for resilience training and their preferences for learning amid shifts in learning platforms. Existing literature exploring resilience primarily focuses on students in health science disciplines (Brewer et al., 2019; Lopez et al., 2018; Sanderson & Brewer, 2017) among at-risk youths (Hines et al., 2005) and among ethnic minorities (Cavazos Jr et al., 2010). Given the scant evidence and under-representation of students from diverse backgrounds, a collective understanding from a multi-ethnic, multi-disciplinary, and Generation Z perspective needs to be generated within a technologically enhanced learning climate (Brewer et al., 2019). Ultimately, this study will lend its findings to the construct of resilience and how future resilience training programs can be designed. By using thematic analysis, participants' understanding and strategies to build resilience and their preferences for its training will be elucidated. Based on resilience theory and VARK model, the present study seeks to address the following research questions:

1. What are undergraduate students' understanding of resilience?
2. How do undergraduate students develop resilience?
3. What are undergraduate students' perception and preference for receiving resilience training?

Method

Participants

A total of 27 Generation Z undergraduate students participated in this cross-sectional descriptive qualitative study. Participants' mean age was 23.33 years ($SD = 3.37$). Students who are male (55.6%), ethnic Chinese (77.8%), and Christians (37%) comprised the majority of the population (Table 1). Participants were purposively sampled by using maximum variation technique (Speziale et al., 2011) according to their ethnicity, faculty, and seniority to ensure that a diverse range of experiences were captured. Table 1 shows the details of participants' profiles.

Instrument

A semi-structured interview guide was developed with reference to resilience theory, which describes how various processes lead to an individuals' resilience (Van Breda, 2018). Given that students possess diverse learning preferences, the VARK model (Fleming, 2006) was additionally used to develop the interview guide. Questions surrounding students' experiences of adversity, facilitators, perception of resilience, past learning, preferences for learning, and suggestions for resilience training were asked. The initial interview guide was circulated to all members of the research team for approval. The guide was subsequently piloted on two undergraduate students to ensure clarity and flow. Interview questions were rephrased and shortened, and the flow was modified according to the pilot interviewees' feedback. The final interview

Table 1 Students' profile and background ($n = 27$)

	N	*%*
Age (years) (Mean, SD)	23.22	3.37
Gender		
Male	15	55.6
Female	12	44.4
Ethnicity		
Chinese	21	77.8
Indian	3	11.1
Javanese	1	3.7
Malay	2	7.4
Religion		
Buddhist	4	14.8
Catholic	1	3.7
Christian	10	37
Hindu	1	3.7
Muslim	4	14.8
Taoist	1	3.7
Free thinker	6	22.2
Course		
Arts and Social Sciences	4	14.8
Business	3	11.1
Dentistry	2	7.4
Engineering	3	11.1
Medicine	3	11.1
Nursing	3	11.1
Law	3	11.1
Science	3	11.1
Double degree programme	3	11.1
Year of study		
1	6	22.2
2	7	25.9
3	7	25.9
4	7	25.9

guide consisted of four domains, namely, adversity, meaning of resilience, strategies to build resilience, and needs and preferences for receiving training.

Data Collection and Generation

Ethical approval for the study was obtained through the university ethics review committee. Potential participants from various faculties were informed of the study through an email containing a recruitment poster sent by their department administrators. Determination of data saturation was ascertained independently by two authors (DA, JC). Eligible participants were above 18 years old, able to comprehend the English language, and were pursuing a full-time undergraduate program at the university.

The first author first shared the study goals, established rapport, and obtained written informed consent from participants before the interviews. Participants were then asked to complete a socio-demographic sheet to provide information on their age, gender, ethnicity, religion, course, and year of study. The semi-structured individual interviews were conducted in English via the synchronous instant messaging (IM) function of Skype. The IM data collection strategy was selected for multiple reasons. First, this study was conducted during the COVID-19 pandemic, during which government-imposed measures limited physical interactions. Second, IM provides a convenient option for technologically savvy Generation Z students, given their competing priorities, unstable Internet connection, and lack of functional cameras (Fung & Lam, 2020). Using IM was a strategy to improve participation rate. Furthermore, using a form of dialogue that is familiar to participants can create a casual and open communication atmosphere no different from verbal interviews (Kaufman et al., 2020; Dimond et al., 2012). Additionally, written narratives allow students to compose their thoughts and provide meaningful and rich information (Speziale et al., 2011) and reduce potential repetitions, which are common in audiotaped interviews (Dimond et al., 2012). Finally, using IM can maintain participants' privacy and confidentiality while achieving depth of inquiry (Pearce et al., 2014). Although using an IM platform omits non-verbal cues displayed during traditional verbal face-to-face interviews, participants were encouraged to use emoticons to express themselves for a richer description of their experiences (Opdenakker, 2006).

Twenty-seven interviews were conducted from March 2020 to June 2020. IM interviews ranged from 55 min to 87 min. All participants received a remuneration of $10 for their time. The data analyses and data collection were performed simultaneously to ensure all research questions were addressed sufficiently. All interviews were conducted by the first author, who is a male PhD candidate with training and prior experience in conducting qualitative studies to ensure consistency. Data saturation was achieved at the 25th participant, but two more interviews were conducted to ensure no new information emerged (Fusch & Ness, 2015).

Data Analysis

The interview transcripts were imported from Skype into Microsoft word by the first author (DA) for data analysis. Another author (JC) verified and checked the completeness of the data transfer. Given that this study sought to identify students' understanding, strategies, and preferences for resilience and its training, a thematic analysis (Braun & Clarke, 2006) approach was chosen. Thematic analysis provides an avenue for researchers to gather insights into a phenomenon from participants' perspective; hence, it was appropriate to the research questions.

Nonetheless, the analysis method was a choice made by the researchers as the construct and constituents of resilience remain debatable, and the goal of the study was to gather participants' understanding of resilience.

Guided by constructivist approach, thematic analysis was conducted inductively from a data-driven approach and independently by two researchers (DA, JC). The first step of the analysis required researchers to be familiar with the data. Hence, all interview transcripts comprising of texts and emoticons were read and re-read to ensure familiarity. In the second step, an open, iterative semantic coding was carried out, where words or sections of texts relevant to the research questions were manually identified. Next, codes with similar meanings or contradictions were collated into a coherent cluster specific to a particular aspect of the dataset. Both researchers (DA, JC) reviewed both sets of coded data, which consisted of 168 codes, and discussed the similarities and differences. A third author (LY) was brought in to resolve discrepancies. Cohen's kappa was used to calculate the inter-rater agreement for coding, and good agreement was established ($K = 0.81$). Following consensus on the developed codes, they were then compared with the interview transcripts to ensure accurate interpretation of the data. Patterns were identified where the most significant and frequent codes were organized. The team reduced the data by organizing codes on the basis of overlap and redundancy. A total of 58 codes were used for subsequent analysis. Codes referring to the same domain were further collapsed into 13 subthemes. The subthemes with similar overarching meanings were combined, forming the final five themes. The themes were reviewed by the team (DA, JC, LY) to ensure that a coherent story was presented.

As ongoing findings from the data analysis informed subsequent sampling, data analysis and collection occurred simultaneously. The researchers conducted a preliminary coding for eight participants' interview transcripts to identify sections where further probing was required. The final themes and subthemes were deliberated between both authors (DA, JC), and the third author (LY) was involved to resolve any discrepancies. Finally, the team selected representative quotations for each theme and subtheme. Figure 1 summarizes the entire research process.

Rigor

This study established rigor on the basis of four criteria: credibility, transferability, dependability, and confirmability (Krefting, 1991). This study was conducted by a doctoral candidate who did not have any dependent relationship with the participants; thus, participants were not under undue influence to provide a socially desirable response (Krefting, 1991). Piloting the interview guide, maintaining a reflective journal that details the research process (interview, recruitment), and debriefing sessions were practices done to reduce researcher-induced bias, which can threaten credibility (Mays & Pope, 2000). The triangulation of investigators, where two independent researchers conducted data analysis, was another measure to ensure credibility and dependability (Krefting, 1991). To prevent misinterpretation due to the nature of IM and to enhance credibility (Opdenakker, 2006), participants were asked to review their transcripts, and researchers sought to clarify any clarifications. An audit trail consisting of raw data, data analytics process, coding tree, and pilot interviews was kept, demonstrating confirmability (Krefting, 1991).

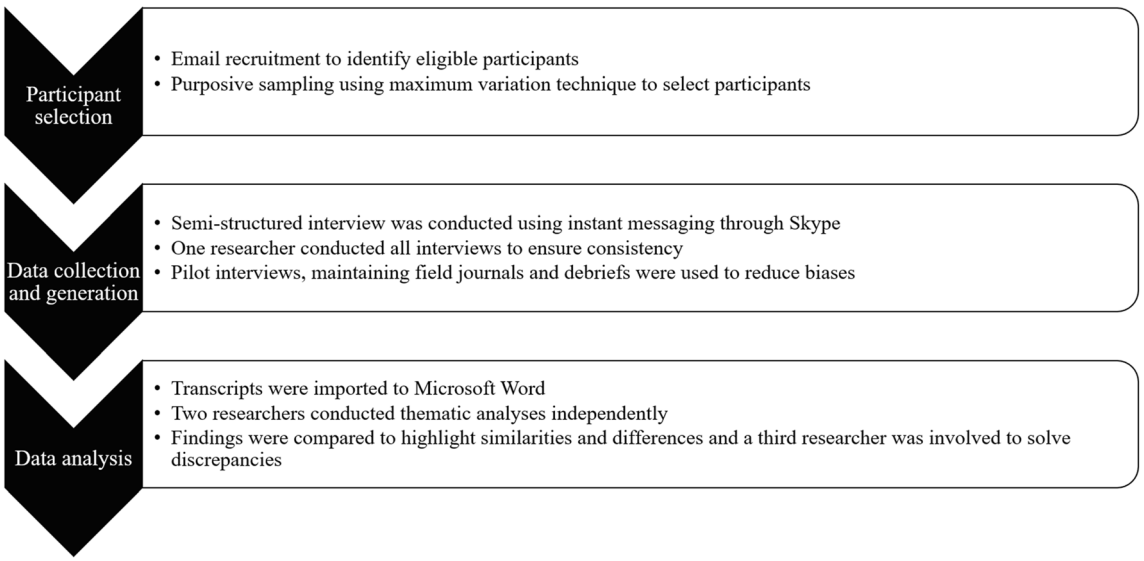

Fig. 1 Research methodology

Results

Five themes describing Generation Z undergraduate students' perception of resilience and preference for receiving resilience training were elucidated (Fig. 2). The themes were: (1) resilience as enduring and withstanding, (2) the building blocks of resilience, (3) resilience: learning or earning, (4) pedagogical considerations for resilience training, (5) and a blended platform for resilience training.

Resilience as Enduring and Withstanding

This theme describes students' interpretation of resilience. All but four students (85.2%) likened resilience to an ability to endure and withstand challenges in life. Although all but one student (96.3%) described their resilience as high, they found their resilience to be influenced by the present situation. Nonetheless, students perceived resilience as an important resource to mitigate the issues arising from the COVID-19 pandemic. Three subthemes described students' interpretation of resilience: (1) resilience is having the tenacity to push through, (2) resilience is dynamic, (3) and resilience is necessary to survive university.

Resilience Is Having the Tenacity to Push through

Seventeen participants (62.9%) characterized resilience as the perseverance and determination that students must possess to push through challenging situations. A final-year female Indian student majoring in art described: "*Resilience means getting back up from a down point and moving on with more strength and positivity in life.*" Consequently, participants described resilience as an essential trait to manage the rigors of university life, achieve high grades, and maintain good mental health. A male freshman from the arts faculty shared: "*Being resilient helps you achieve the grade that you desire and, more importantly, ensure that you remain sane and that your mental health is in the best shape.*"

Resilience Is Dynamic

All but two students (92.6%) reported high levels of resilience, and they attributed such resilience to their prior life experiences. One first-year male Chinese medical student shared: **"***I'm 8/10 resilient because I faced setbacks in school, and I bounced back from them. Now, I feel that I'm on my way to achieving my goals.*" Notwithstanding, the level of resilience was described to be dynamic and fluctuating with time, place, and situation. One fourth-year female arts student said: *"I don't think resilience level is static; it doesn't drop either, but a higher level of resilience is required and demanded in situations where we face challenges that we have never faced before."* This opinion was echoed by a male freshman in computing: "*During my time in national service* [referring to mandatory conscription for all able-bodied male citizens in Singapore]*, I felt like my resilience was at a peak. Now, as a civilian again, I feel like my resilience isn't as high because there isn't as much physical and mental pressure.*" Surprisingly, participants found themselves more resilient and verbalized greater improvement after imposed COVID-19 measures were eased. This change was seen in a first-year student majoring in arts: *"… my resilience score will become higher as the circuit breaker* [referring to imposed COVID-19 measures in Singapore] *measures ease because it's like the light at the end of the tunnel.*"

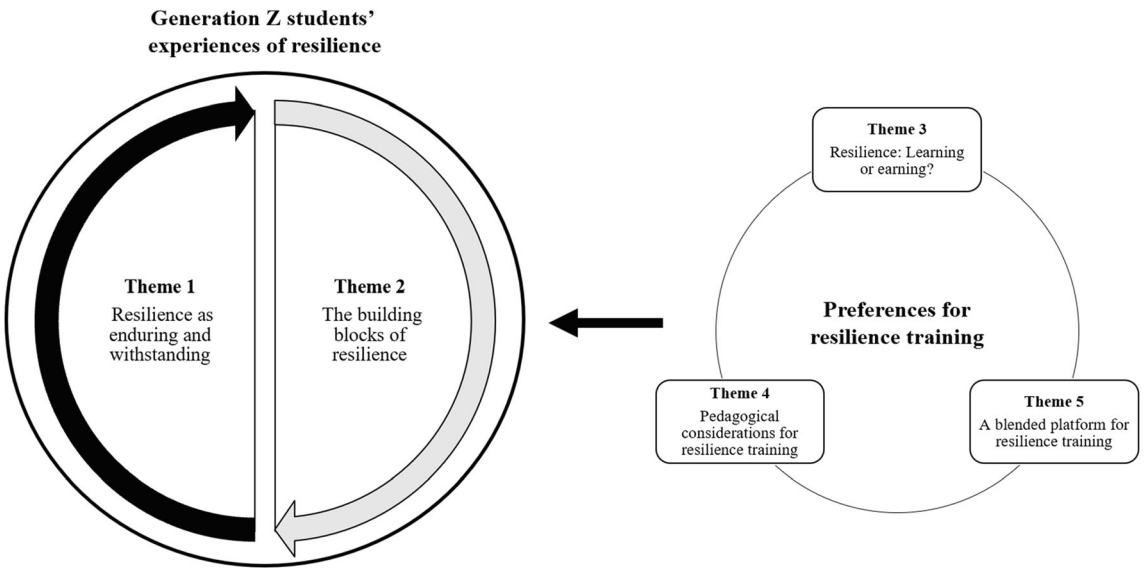

Fig. 2 Undergraduate students' perception of resilience and preferences for receiving its training

Resilience Is Necessary to Survive University

When asked about resilience and its impact on school, all participants described it as an essential trait to manage the rigor of academics, achieve high grades and maintain good mental health. A second-year dental student shared: *"Resilience will enable me to bear with the academic load, while having discipline to stick to a consistent study plan, instead of panicking."* Another arts freshman said*: "being resilient helps you achieve the grade that you desire and more importantly, ensure that you remain sane and that your mental health is in the best shape so that your performance during the exam would be optimal."* The importance of being resilient was further highlighted during the COVID-19 pandemic, as students mentioned stress in adapting to new modes of learning. A third-year female Chinese law student shared: "*the transition from face-to-face learning to e-learning is an added stress.*"

The Building Blocks of Resilience

Given that participants described resilience as a necessary trait, understanding how resilience was built has gained interest. All students described various strategies that built their resilience. This theme describes students' building blocks of resilience and perceived strategies that will be helpful in overcoming their adversities. The building blocks were of intrinsic and extrinsic nature. Intrinsic factors include their determination to succeed in school; whereas friends, teachers, and significant others were external resources used to build students' resilience. This theme was illustrated in three subthemes: (1) desire and determination build resilience, (2) friends are more than merely transactional benefits; they impact resilience, (3) and resilience is a lesson from significant people.

Desire and Determination Build Resilience

Fourteen students (51.9%) drew on their experiences during their formative years and family background as their sources of determination that build their resilience. A fourth-year male Chinese medical student commented: "*I need to work hard for it myself. I come from a low-income family.*" Participants additionally attributed their resilience to their parents' Asian parenting style. They described this parenting style, which is prominent in Singapore and colloquially known as "kiasu," as parents' general fear of losing out. This parenting style led to participants' years of coping with multiple enrichment courses, which was described to have inevitably enhanced their resilience from a young age. One second-year female Chinese science student recalled: "*I've been trained to be disciplined and resilient because of Asian parenting. I've been enrolled in ballet and piano classes at a young age.*"

Friends Are more than Merely Transactional Benefits; they Impact Resilience

All participants believed that individuals within their social circle play a critical role in building their resilience. Friends, in particular, surfaced in 15 narratives (55.6%); they were described as "more than merely transactional benefits" and were valuable sources of emotional, intellectual, and social support. One male senior in a double degree program said: "*Projects, bidding of modules together as friends, pooling together resources … prompted me to want to have more friends. More friends then allowed me to understand that friendships were more than merely transactional benefits but also a great source of emotional support and mental wellbeing."*

Although friends were deemed as essential in building resilience, an element of duality seems to exist because building a social circle was not a mere walk in the park for four participants (14.8%). Participants were concerned about their social competency and felt that they had to "look good" by fitting into an ideal body image to be validated. An ideal body image was important because several students felt that physical appearance and body image played a role in building social connections. The idea of body image was expressed differently among genders. Female students were more concerned with their physical appearance, whereas male students were more concerned with their behaviors. A third-year female Malay arts student commented: "*It didn't feel like people wanted to connect with a fat girl.*" Students found a need to gain validation among peers, requiring them to behave and dress in a certain manner, which contributed to stress. A male Chinese senior in a double degree program added: "*Gaining validation was super important to me in year 2 to the extent that I felt fake. I had to dress different, act funny, and be loud just to fit in*."

Moreover, six participants (22.2%) described that the competitive atmosphere in university led to individuals putting up numerous facades, which made building meaningful connections difficult. This competitive environment was important in appreciating how students develop resilience considering that social connectedness was verbalized as an essential component. This competitiveness was highlighted in a third-year male Chinese business student's narrative: "*It* [referring to the university] *kind of creates a 'cut-throat' environment and attitude in everyone. Not everyone can be their true selves in class all the time as there is always some kind of agenda bugging you at the back of your mind."*

Resilience Is a Lesson from Significant People

Eleven students (40.7%) also described how they drew resilience from significant people. For instance, interactions with the less fortunate can be an impactful experience which they

draw resilience from. A final-year female Chinese student in nursing shared: "*I've volunteered at a girls' shelter before, and that experience taught me what real resilience is… these people make me see that the problems I have are trivial.*" Faculty support was also pivotal among students in building resilience. A first-year male Javanese double-degree student shared: "*The professor was very patient and nice when we went to see him.*" This openness presented as a form of academic support, which built his ability to cope with academic work. Finally, participants made sense of life circumstances and drew strength from their faith. One fourth-year male Chinese student majoring in a business program said: "*Challenges faced are planned by God, and these are placed by Him for us to develop so that we can serve Him better.*"

Resilience: Learning or Earning?

As participants developed resilience through individual and social factors, identifying if these factors could be integrated into a training program was important. Hence, this theme describes students' needs and perception of receiving resilience training. Some students felt that resilience is malleable and can be learned. Mindset-based training, positivity, reflexivity, and time management were some of the suggested skills. However, other students felt that resilience training was a lesson in life experience that could be learned from others' experiences. This theme was described in two subthemes: (1) Training as a potential avenue to enhance resilience and (2) resilience is a lesson from life.

Training as a Potential Avenue to Enhance Resilience

Participants viewed resilience as essential to survive the challenges in university. Nineteen students (70.4%) verbalized the need for resilience training by equipping them with certain skills. For example, a third-year female Indian arts student stated: "*I think it* [resilience training] *is very much needed. I have so many hardships, but I had to dig instinctively into my soul to cope…. I think there are small skills that can be taught that add up to the bigger picture of resilience.*" When students were asked about their needs, the majority of them shared the need to develop positivity and to understand that failure is acceptable. A male Chinese engineering sophomore shared: "*Teaching someone to be positive and not overly negative is important. We should also realize that we are not in a sprint but in a marathon where there will surely be obstacles. We cannot change our predicament, but we can change our response and mindset to it.*" In addition, participants needed time management skills to manage the complexities of academic life. A senior female Chinese nursing student shared: "*I realized that many a times, I want to give up on something because I feel that the time for me to complete the task on time is not enough.*"

Resilience Is a Lesson from Life

Eight participants (29.6%) also felt that resilience is developed as they navigate through life. A second-year male Chinese engineering student stated: "*The majority of people 'receive' this form of training in one way or another in their daily life.*" Nevertheless, participants felt that resilience can be earned by interacting with individuals who demonstrate high levels of resilience. One second-year female Chinese arts student quipped: "*…have people who are willing to share their stories and have some challenges of their own. Thus, even if, let's say, I was born with a silver spoon in my mouth and had zero challenges in my life, I would still be able to learn from these case studies from my peers.*"

Pedagogical Considerations for Resilience Training

This theme focuses on appreciating students' perception of how knowledge acquired from resilience training could be imparted. Participants alluded to the importance of learning from accounts and stories from resilient individuals' life stories as a potential strategy to impart resilience-enhancing skills. In addition, using reflections as a means to understand oneself was another proposed method for resilience training programs. This theme is described in two subthemes: (1) using contextually relevant scenarios in resilience training and (2) reflective practices shape resilience.

Using Contextually Relevant Scenarios in Resilience Training

Twelve students (44.4%) described learning from narratives, which are true story accounts, as a proposed pedagogy for designing resilience training. As shared by one fourth-year male Chinese medical student: *"A good way to design the material can be based on stories or true accounts, which can be quite applicable to students, or can be issues that they might encounter in the future. This brings along the relevance of the topic to their daily life."* The use of these narratives can subsequently form the basis for the development of contextually relevant scenarios, which majority of students preferred.

In 16 students (59.2%), the preference for learning through scenarios was useful to demonstrate how resilience will be practical in their academic lives. Participants felt that resilience can be imparted through experiential learning by allowing them to create their own solutions to the proposed situation. This exercise can enhance their mental capacity when the situation actually occurs. A final-year female Chinese law student shared: "*By allowing participants to figure out a solution to it either individually or in groups, they may be more mentally prepared for such situations in their real lives.*"

Reflective Practices Shape Resilience

Using reflections to internalize resilience-promoting factors was described to be beneficial among 19 students (70.3%). Participants alluded to the importance of reflections as central to resilience training, as it provides an avenue for developing self-awareness. One third-year female Indian medical student remarked: "*Resilience training should involve some kind of reflection or an avenue to better understand yourself and your emotions. I think when you are able to figure out what is important to you, it serves as a motivation for WHY you want to be resilient."*

However, given students' competing priorities, the effectiveness of reflective practices may be limited. A senior female Malay arts student shared: "*Although it may be useful to reflect on what we have learned, most students would not take such assignments seriously as they are more concerned with their schoolwork.*" Nevertheless, participants found value when such reflections were reviewed and commented by the facilitator. One male Chinese law sophomore said: "*Feedback from the trainers are useful to me. So, it has to be two-way street and not just self-entries in a journal*."

A Blended Platform for Resilience Training

Given that this study took place during a pandemic and participants had first-hand experience of online learning, they found short videos and elements of face-to-face interactions as an effective mode for learning. A blended approach was recommended to deliver resilience training, and this theme is highlighted in three subthemes: (1) a blended approach to impart resilience, (2) essential features for an online-based resilience training, (3) and determining the right time for initiating resilience training.

A Blended Approach to Impart Resilience

All participants described resilience training as a set of soft skills that requires a combination of platforms. A final-year male Chinese business student stated: "*Resilience is based more on soft skills, so I think seminars still work the best as they ensure that everyone's understanding is correct*." Moreover, 18 participants (66.74%) felt that resilience training should adopt a dialectic approach. A third-year female Indian medical student added: "*The face-to-face aspect functions like a tutorial for people to share their experiences and discuss them, which is a good avenue to also learn from challenges that others face*."

With regard to content delivery, 17 participants (62.9%) indicated that an online lecture is a suitable platform for learning owing to its convenience. One arts male Chinese freshman shared: "*I would prefer a lecture to be webcasted* [referring to an online lecture] *because it means I can watch at my own convenience and pace and as many times as I want*." However, 18 participants (66.7%) expressed concerns with independent learning through purely online delivery, and they described a need for dedicated face-to-face sessions. One third-year female Chinese arts student stated, "*I don't learn much from an online course! I get too distracted. Zoom calls would be better if you can get interaction. It's live so it's more applicable to the people present.*"

Essential Features for an Online-Based Resilience Training

The majority of participants (62.9%) described several features for an online platform. Students found that start, stop, and fast-forward functions in videos are essential features for online learning. For instance, a male Javanese freshman in a double-degree program highlighted: "*Video format helps me learn best… I like that I can pause it, replay it, or speed it up. If some parts are easy to understand, I can speed it up and save time."* Each video is recommended to be divided into 15–20-min segments to encourage a high level of attentiveness. A male Chinese engineering senior suggested: "*Sessions should be in blocks of 15–20-minute videos with a specific content to be covered, which is similar to YouTube videos. The short attention span of a student might not sustain a full 1-hour webcast lecture*." In addition, participants' previous learning experiences showed that an informative session should be within two hours as learning would not be optimal beyond that. This finding is illustrated by a final-year female Chinese dental student: "*Anything more than 2 hours has diminishing returns. The human attention span is only so long … I just reach a point wherein I can't absorb anymore.*"

Determining the Right Time for Initiating Resilience Training

Sixteen participants (59.3%) felt that resilience-enhancing skills should be introduced during the school term particularly before exams and major assignments. This timing provides an opportunity for students to apply their newly acquired skills. This schedule was explained by a female Chinese nursing sophomore: "*I think a suitable timeframe would be between midterms and finals period as during this period, many students experience major mental breakdown due to the excessive amount of projects and lesson materials that need to be completed. With the help of resilience training, I think students will be able to better understand the importance of resilience."*

Discussion

This study explored Generation Z undergraduate students' resilience and needs for resilience training amid a global pandemic, which resulted in various changes in students'

academic endeavors. The interviews revealed that undergraduate students described resilience as an enduring and withstanding trait that is essential for navigating through university. Students suggested numerous strategies that can potentially enhance their resilience. Finally, students indicated their preferences for resilience training to be delivered over a blended platform, comprising of short videos with each session kept within two hours.

Students have characterized resilience as enduring and withstanding and as recovery from adversities, which are congruent with known the definitions of resilience (Martin & Marsh, 2009; Van Breda, 2018). This definition was similarly reported in existing resilience literature among students, where resilience is described as a process of perseverance and overcoming obstacles (Abukari, 2018; Cavazos Jr et al., 2010; Clohessy, McKellar & Fleet, 2019; Wahab et al., 2017). Participants have additionally described a high level of resilience, which fluctuates and changes in response to the situation. The dynamic nature of resilience is not uncommon, given that studies have reported that students have high levels of resilience, which are dynamic in response to the experienced situation (Chung et al., 2017; Clohessy et al. 2019). Proposed reasons for high levels of resilience can be attributed to several reasons but not limited to inherent high level of resilience, presence of strong network, vicarious life experiences, and potential social desirability biases associated with questionnaire surveys (Chung et al., 2017; Yeager & Dweck, 2012).

Nevertheless, all but one participant described a high level of resilience despite reporting numerous challenges, such as radical changes in teaching and learning processes, environment, and imposed movement measures during the COVID-19 pandemic. This high level of resilience could be due to the numerous building blocks described by participants in this study. These building blocks encompassed personal, relational, cultural, and religious factors that enhanced their resilience. These factors have been widely reported and are consistent with resilience enhancing strategies that encompass personal, interpersonal, and environmental factors (Farquhar et al., 2018; Leung et al., 2020; Sanderson & Brewer, 2017; Yeager & Dweck, 2012).

The literature has similarly reported that individuals' personal characteristics, such as intrinsic determination and desire, were building blocks of resilience (Abukari, 2018; Borjian, 2018; Yeager & Dweck, 2012). In addition, individuals from a more socioeconomically disadvantaged household seemed more determined to excel (Çelik, 2017; O'Neill & Bowers, 2020).

In the relational domain, relationships took the central stage as participants primarily developed resilience through social connections. In spite of the COVID-19 pandemic and its imposed measures, participants in this study did not surface any limitations in maintaining their relationships. There were no limitations because of students' familiarity with technology and the availability of social networking applications that maintained connections. Relationships with parents, friends, and significant others such as teachers fostered students' resilience.

Parents played a direct significant role by providing emotional and financial support (Abukari, 2018; Borjian, 2018). Moreover, this study has found another mechanism, where parents have instead played a huge role in building participants' resilience from a young age by making them juggle a constant barrage of enrichment programs. Asian parenting styles are influenced by Confucianism and the fear of losing out, which have led to an excessive focus on their children's education and academic performance (Ellis, 2014; Huang & Gove, 2015).

Beyond family relationships, friends were described as a source of building resilience. Social support through friends have been documented as one that enhances resilience (Fernández-Martínez et al., 2017; Lekan et al., 2018). However, students have expressed difficulties in building such connections. Participants felt limited in socializing when issues concerning physical appearance, behavior, and competitiveness surface, which is a new dimension to understanding the impact of friendships on an individual's resilience. This study found that dissatisfaction with one's own body image was a barrier to making friends, and participants found themselves behaving in a certain manner to be viewed positively by others (Vorauer et al., 2009). Such behavior, in turn, may have influenced their resilience by limiting their ability to make genuine friendships and thus reducing their social network.

A university is a competitive environment and serves to mold collaborative and cooperative learning to emulate future work settings (Attle & Baker, 2007; Dimant & Hyndman, 2019). However, participants reported the university as a barrier to building social connections, which could be due to numerous reasons. First, the COVID-19 pandemic brought about numerous abrupt changes including school closures and social distancing measures, which limit physical engagement between students. Second, competitiveness brought about by graded class participations (Frymier & Houser, 2016; O Connor, 2013) may have influenced their behavior to "outperform" their peers, creating that sense of a "cut-throat" environment. Moreover, Hope (2016) found that 85% of Generation Z students rated themselves as loyal, but only 10% of them felt that their peers were loyal, highlighting their skepticism toward their friends' loyalty.

Drawing resilience from significant others, such as teachers, is common among students. This finding was similarly reported by Turner and Simmons (2019); their results showed that academics can often provide support for students. Experiential learning from others is also valued by Generation Z students (Seemiller & Grace, 2016); these individuals learn from the life of the less fortunate to develop their resilience. Compared with other generations, Generation Z students have stronger faith and spirituality (Hope, 2016); thus, they draw strength from religion in times of adversity.

With regard to their needs for resilience training, participants verbalized that various skills, such as mindset-based training, positivity, reflexivity, and time management, will enhance their resilience. In relation to resilience theory (Van Breda, 2018) and the psychosocial building blocks of resilience (Southwick & Charney, 2012), positive outlook and finding meaning are known to enhance resilience. University students often juggle numerous competing demands and activities; hence, they consider time management skills useful in enhancing academic outcomes and mitigating stress (Kaushar, 2013). On the contrary, existing resilience interventions among students do not incorporate any form of time management skills in their training (Games et al., 2019; Steinhardt & Dolbier, 2008). Therefore, this new dimension is important and potentially helpful in improving students' resilience.

Participants in this study drew strength from their vicarious experiences and interaction with other resilient individuals who have taught them to appreciate resiliency. Moreover, Generation Z students prefer learning through experience (Seemiller & Grace, 2017). Given that participants valued experiences from other resilient people or through their personal experiences, this finding supports the use of contextually relevant scenarios to design resilience training. The application of case scenarios (Peng et al., 2014), problem-based learning (Jabarullah & Hussain, 2019), and reflective practice (Crane et al., 2019) have been effective in building resilience skills (Aiello et al., 2011).

In relation to students' preference for resilience training and reference to the VARK model, the findings of this study suggest that learning is not limited to a particular method but requires a multimodal approach in delivering resilience training (Khongpit et al., 2018; Prithishkumar & Michael, 2014). Given that a multimodal approach using a variety of learning modes complements students, participants have verbalized a preference for a blended approach in delivering resilience training. This finding is expected given that the current generation of students prefer interactive learning platforms (Twenge, 2013). Students have suggested that content-heavy materials should be taught over online platforms in the form of videos. Start, stop, fast-forward, and slow-down functions should be available in these videos to allow individuals to learn at their desired pace. The use of video-based lectures in online learning can facilitate learning for individuals with preferences for visual and reading learning preferences (Khongpit et al., 2018). Notwithstanding, students have suggested the use of face-to-face sessions, which provide opportunities for discussion and clarification; such approach has been described as most useful for those with preference for auditory learning preferences (Amaniyan et al., 2020; Fleming, 2006). Our findings were similarly found in studies among university students who viewed blended learning positively, as it was convenient and enabled them to learn at their own pace (Akbarov et al., 2018; Ilic et al., 2015). A small number of individuals described group discussions to be effective, as it facilitates communication, information dissemination, and mutual support (Ginns & Ellis, 2007; Ilic et al., 2015). As the proposed resilience training program potentially requires interaction between students in an online synchronous platform, a small class size can encourage fruitful discussions (Chen et al., 2017).

The right time to deliver resilience training was determined in two directions, an appropriate time to deliver and an acceptable amount of time. Numerous resilience training programs for students did not provide a specific time to deliver intervention (Peng et al., 2014; Steinhardt & Dolbier, 2008); hence, our study provided new insights by identifying a suitable time frame. Future resilience training could be initiated at the beginning of the semester so that participants can apply the acquired skills when they encounter subsequent challenges. As students may often have competing priorities, the duration and time required for the training should be balanced. Nevertheless, students alluded to the importance of lengthy trainings to highlight the importance of resilience training. Participants in our study recommended that sessions under two hours, consisting of online videos lasting 15 min, are ideal for attention retention and optimal learning. Studies have increasingly shown that individuals have an attention span of up to 15 min, and shorter videos achieve higher levels of completion (Bradbury, 2016).

Conclusions

This study elucidated undergraduate students' perception of resilience and their preferences for receiving resilience training. Given the scant literature exploring undergraduate students' perception of resilience across a broad group of students from diverse demographic backgrounds, the findings contributed to the wide literature on resilience. In particular, the study highlighted how Generation Z students perceive and build resilience during the COVID-19 pandemic.

The findings of this study have built the basis for further research and educational practice. Given that students have highlighted the importance of being resilient, educators must incorporate a form of resilience-enhancing training within formal university curriculum. Students' narratives revealed that resilience can be influenced by a myriad of personal, relational, and environmental factors. This study can lend its findings to future research in designing and evaluating resilience training programs. First, future training programs should consider a socio-ecological approach while designing its contents. Second, building on an individual's personal strength such as positivity, finding meaning and coping abilities should be imparted. Further, a focus on developing participants' social capital and perception of their body image is now important as it

builds social networks which can additionally enhance resilience. Healthcare providers, educators, and school administrators can organize self-help workshops and utilize these resilience-enhancing factors to aid in their medical or pastoral care.

Students have additionally suggested that resilience training be conducted using a blended approach, using videos, sessions within two hours, and held prior to major assessments and during the academic term. Training contents can be developed using narratives drawn from others' life experiences, which have been described as an effective manner for Generation Z students to become resilient. In light of these new findings, this study recommends that these factors be considered in the design of future resilience training programs. Given that resilience was verbalized to be an essential trait to mitigate academic challenges, the findings of this study suggest that building undergraduates' resilience should be incorporated early in their journey during the academic term.

However, the findings from this study has to be interpreted with respect to limitations. First, this study was limited to one university in Singapore, and additional work is needed to understand undergraduates' experience of resilience that resonates among an Asian population. Nevertheless, this study adopted a purposive sampling method combined with a multi-ethnic and multi-faculty approach to increase demographic representativeness. In addition, the use of IM as a data collection strategy can potentially limit verbal and non-verbal cues and data. Nonetheless, technologically savvy Generation Z students used emoticons to express their emotions. The cross-sectional design potentially limited the exploration of changes in resilience over time. Thus, adopting a longitudinal design to observe changes in resilience would be needed to gather deeper insights into the phenomenon.

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Data Availability The data that support the findings of this study are available from the corresponding author, [SS], upon reasonable request.

Declarations

Ethics Approval Ethics approval (DERC19018) was obtained from the National University of Singapore's Department Ethics Review Committee.

Statement of Human Rights All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helskinki declaration and its later amendments or comparable ethical standards.

Informed Consent Informed consent was obtained from all individual participants included in the study.

Conflict of Interest The authors do not have any conflict of interest to declare.

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