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# PREDICTORS OF STUDENT DISENGAGEMENT IN FULLY ONLINE HIGHER EDUCATION PROGRAMS

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## Abstract

***Introduction:*** *The rapid expansion of fully online higher education has increased access for diverse student populations but has also intensified concerns regarding student disengagement. Disengagement in online learning extends beyond withdrawal or dropout and includes behavioral, motivational, psychological, and contextual dimensions that may precede formal attrition. This study sought to identify key predictors of student disengagement in fully online higher education programs within a globally diverse sample of online learners.*

***Methods:*** *A cross-sectional, correlational design was employed, with data collected from 140 students enrolled in fully online degree programs across multiple continents. Participants completed a detailed sociodemographic questionnaire and a purpose-designed 46-item disengagement instrument assessing behavioral, psychological, instructional, and contextual dimensions of disengagement. Descriptive statistics, Pearson correlation analyses, and multiple linear regression were conducted using STATA 18.*

***Results:*** *Overall disengagement levels were low to moderate (M = 2.39, SD = 0.48). Psychological and contextual factors emerged as the strongest correlates and predictors of disengagement.*

*Digital fatigue, mental well-being burden, and time-zone or external demands were each independently correlated with higher disengagement. Instructional and social factors, including course design clarity, instructor presence, feedback quality, and sense of community, also significantly predicted disengagement after controlling for sociodemographic variables. Among background characteristics, full-time employment predicted higher disengagement, while older age was associated with lower disengagement.*

***Conclusion:*** *These findings suggest that student disengagement in fully online higher education is a multidimensional phenomenon shaped more strongly by psychological strain, instructional experiences, and contextual constraints than by static sociodemographic variables. Interventions aimed at reducing disengagement should therefore extend beyond course design improvements to include strategies addressing digital fatigue, mental well-being, and temporal flexibility in globally distributed online programs.*

**Keywords**:
Online Higher Education, Student Disengagement, Psychological Factors, Instructional Design, Digital Fatigue

## Introduction

Over the past decade, and particularly following the global disruptions to in-person education, fully online higher education has expanded across institutions, disciplines, and geographic regions [1]. Online programs now serve diverse populations of adult students, including working professionals, caregivers, international students, and students returning to education later in life [2]. While this expansion has increased access and flexibility, it has also increased concerns regarding student disengagement, persistence, and well-being in online modes of delivery [3].

Student disengagement in online higher education is a complex phenomenon influenced by several factors. It extends beyond course withdrawal or dropout to include more subtle behaviors such as reduced motivation, passive participation, missed deadlines, cognitive fatigue, and emotional exhaustion [4]. Prior research has consistently shown that disengagement negatively affects academic performance, satisfaction, and retention, while also contributing to increased stress and burnout among students [5,6]. Despite global growth in online modes of delivery, disengagement remains one of the most persistent challenges faced by online students and the institutions that serve them [7].

Current literature suggests that disengagement in online learning is influenced by a combination of individual, instructional, and contextual factors. Course design clarity, instructor presence, timely feedback, and opportunities for interaction have been identified as key instructional components that support engagement [8,9]. At the same time, external demands such as employment, caregiving responsibilities, and time-zone differences can place additional strain on students' ability to remain engaged, particularly in asynchronous programs [10].

More recently, attention has turned toward the role of digital fatigue, mental well-being, and sustained screen exposure in shaping online learning experiences. Prolonged engagement with digital platforms has been associated with cognitive overload, reduced concentration, and emotional exhaustion, all of which may contribute to disengagement over time [11,12]. Adult learners, who often balance academic responsibilities alongside work and family commitments, may be especially vulnerable to these stressors.

Although prior studies have examined individual predictors of online engagement and persistence, there remains a need for research that examines multiple disengagement-related factors simultaneously within a global population of online higher education students. Many

existing studies focus on single institutions, specific programs, or narrow demographic groups, limiting the generalizability of their findings. Disengagement is often defined solely through retention or completion metrics, overlooking the experiential and psychological dimensions of disengagement that precede withdrawal.

The primary purpose of this study was to identify key predictors of student disengagement in fully online higher education programs. The secondary purpose of this study was to examine which sociodemographic variables, educational background, course design, instructor presence, digital fatigue, mental well-being, time-zone mismatch, and competing external demands are correlated with disengagement-related behaviors and experiences. The findings have the potential to inform course design, instructional practices, student support services, and institutional policy development as fully online higher education continues to expand globally.

This study employed a cross-sectional, correlational research design to examine predictors of student disengagement in fully online higher education programs. Guided by prior theoretical and empirical work, the study addressed the following research questions: (RQ1) What is the overall level of student disengagement in fully online higher education programs? (RQ2) Which behavioral, psychological, instructional, and contextual factors are correlated with student disengagement? and (RQ3) Which factors independently predict disengagement when considered simultaneously? It was hypothesized that psychological and contextual factors (e.g., digital fatigue, mental well-being burden, and external demands) would be stronger predictors of disengagement than static sociodemographic variables.

## Methodology

This study was approved by the Institutional Review Board of European International University – Paris (IRB #EIU/ECC/2025/1474). The study followed the Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) reporting guidelines for cross-sectional research [13].

## Study Design and Procedures

### Measures

The questionnaire consisted of two main components: (1) a detailed sociodemographic and educational background section and (2) a purpose-designed disengagement questionnaire assessing multiple dimensions of disengagement in online higher education.

The sociodemographic and educational section collected information on age, gender identity, ethnicity, marital status, household income, country of residence, international student status, level and field of study, year of enrollment, university type, enrollment status (full-time or part-time), employment status during study, highest level of education completed prior to the current program, and prior experience with fully online learning. Additional items assessed caregiving responsibilities, estimated weekly study time, reliability of internet access, availability of a dedicated workspace, consistency of weekly study schedules, and primary devices used for academic work.

The second component of the survey was a 46-item disengagement questionnaire developed for the purposes of this study, informed by prior literature on student engagement, academic burnout, digital fatigue, and online learning persistence. Items were rated on a five-point Likert scale ranging from 1 (“Strongly disagree”) to 5 (“Strongly agree”). The questionnaire assessed multiple domains of disengagement, including withdrawal intentions and reduced participation, passive engagement behaviors, avoidance and missed coursework, digital fatigue and burnout, loss of motivation, course design clarity, instructor presence and responsiveness, feedback quality, sense of community, mental well-being, time-zone challenges, and competing external demands. Several items were reverse-scored to reduce acquiescence bias, with higher scores indicating greater levels of disengagement.

### Participants and Sampling

Participants were recruited internationally through social media platforms, online student communities, remote-learning forums, and global academic discussion groups. A non-probability convenience sampling technique was used, supplemented by broad international recruitment to increase diversity in geographic location, institutional context, and student background. Recruitment materials were distributed with the aim of maximizing geographical, institutional, and cultural diversity among respondents. Eligible participants were required to be at least 18 years old, currently enrolled in a fully online, degree-seeking higher education program, and able to complete an online survey in the English language. Participation was entirely

voluntary, no incentives were offered, and participants could withdraw from the survey at any time prior to submission.

A priori power analysis was conducted using G*Power (G*Power 3.1 *[computer software], 2009*) [14] for a multiple linear regression model examining key disengagement-related predictor domains ($f^2 = 0.15$), $\alpha = 0.05$, and desired power of 0.80. The analysis indicated a minimum required sample size of 140 participants. This sample size also provides adequate power for planned secondary analyses, including correlation analyses.

**Data Collection and Confidentiality**

Data were collected using Google Forms (Google LLC. (2025). *Google Forms [online form tool]*. Before accessing the questionnaire, participants were presented with an electronic informed consent form outlining the purpose of the study, procedures, voluntary nature of participation, potential risks, and confidentiality protections.

No personally identifiable information, including names, email addresses, IP addresses, or student identification numbers, was collected. Anonymity settings were activated within the survey platform. All data were stored on a password-protected computer accessible only to the researcher and, where applicable, the supervising faculty member. Data were used solely for research purposes and reported only in aggregate form.

**Data Analysis**

All statistical analyses were conducted using STATA 18 (StataCorp LLC, *Stata Statistical Software: Release 18. College Station, TX: StataCorp LLC, 2023*). Following data collection, the dataset was screened for missing, incomplete, or inconsistent responses. Variables were cleaned and coded as required, and reverse-scored items were coded such that higher scores reflected greater disengagement prior to computation of disengagement scores.

Descriptive statistics were used to summarize participant demographics, educational characteristics, and disengagement levels. A total disengagement score was computed as the mean of all disengagement items, with higher scores indicating greater disengagement. Disengagement domains were grouped conceptually into behavioral and motivational components (withdrawal, passive engagement, avoidance, motivation loss), psychological and contextual components (digital fatigue, mental well-being, time-zone and external demands), and instructional and social components (course design, instructor presence, feedback quality, sense of community).

Pearson correlation analyses were conducted to examine correlations between disengagement domains and potential predictor variables. The correlations were interpreted as trivial effect size ($r < 0.10$), small effect size ($0.10 \leq r < 0.30$), medium effect size ($0.30 \leq r < 0.50$), large effect size ($0.50 \leq r < 0.70$), and very large effect size ($r \geq 0.70$) [15]. A multiple linear regression model was conducted to assess the combined effects of sociodemographic characteristics, academic factors, instructional experiences, and psychological and contextual variables on total disengagement. $R^2$ was interpreted as small effect size ($R^2 < 0.09$), medium effect size ($0.09 \leq R^2 < 0.25$), and large effect size ($R^2 \geq 0.25$) [16]. The reference factor variable for gender was female; for age, "18–24 years"; for level of study, "undergraduate (Bachelor's)"; for course load, "part-time"; for employment status, "not working"; and for caregiving responsibilities, "no caregiving responsibilities." Statistical significance was set at $p < 0.05$. Model assumptions were assessed prior to interpretation. Multicollinearity was evaluated using variance inflation factors (VIF). Normality, linearity, and homoscedasticity of residuals were examined through residual plots and tests of normality. Internal consistency was evaluated using Cronbach's alpha, with values $\geq 0.70$ interpreted as acceptable, $\geq 0.80$ as good, and $\geq 0.90$ as excellent [17].

## Results

### Participant Characteristics

Of the 145 participants who initiated the survey, five were excluded for not meeting the fully online enrollment criterion, yielding a final sample of 140 participants. The sample was relatively balanced by gender, with 53.6% identifying as male and 46.4% as female. Participants were predominantly younger adults, with the majority aged between 18 and 34 years (78.5%), while smaller proportions were aged 35 to 44 years (15.7%) or 45 years and older (5.7%). In terms of ethnicity, most participants identified as White/Caucasian (59.3%), followed by Black/African American (27.1%) and Asian/Pacific Islander (10.0%), with smaller proportions identifying as Hispanic/Latino or other ethnicities. The majority of respondents were single and never married (58.6%), and household income levels varied, with over 60% reporting annual incomes below $40,000 or preferring not to disclose income.

Participants were geographically diverse, representing multiple continents. The largest proportions resided in North America (32.1%) and Europe (27.9%), followed by Africa (17.9%) and Asia (14.3%). A substantial majority of respondents identified as international students (71.4%), reflecting the global reach of fully online higher education programs. Academically,

nearly half of the participants were enrolled in undergraduate programs (49.3%), while 35.7% were enrolled in postgraduate (Master's) programs, and 12.9% were pursuing doctoral studies. Most students were in the early to middle stages of their programs, with 74.3% in their first or second year of study. Participants represented a wide range of academic fields, most commonly Business and Economics (29.3%), Engineering and Technology (20.7%), Arts and Humanities (18.6%), and Health Sciences (15.7%). The majority were enrolled at public institutions (60.7%) and studied full-time (70.7%).

Regarding learning conditions and external commitments, over half of the participants were not working while studying (52.9%), while 29.3% reported full-time employment. Caregiving responsibilities were reported by 42.9% of respondents. Most participants reported studying between 5 and 15 hours per week (68.5%), having reliable internet access (95.7%), access to a dedicated workspace (84.3%), and designated study time each week (75.7%). The majority had prior experience with fully online courses (75.0%). Laptops were the primary device used for academic work (81.4%), with desktops, tablets, and smartphones used less frequently (Table 1).

**Overview of Student Disengagement**

Overall disengagement levels in the sample were low to moderate, with a mean total disengagement score of 2.39 (SD = 0.48), reflecting values below the midpoint of the five-point scale. Among the disengagement domains, mental well-being concerns and digital fatigue showed the highest mean scores, indicating that stress, emotional load, and prolonged screen exposure were prominent contributors to disengagement experiences. Time-zone challenges and external demands also showed higher mean levels relative to other domains.

Lower mean scores were observed for withdrawal intentions, avoidance behaviors, and motivation loss relative to other disengagement domains. Course design, instructor presence, and feedback quality also demonstrated lower mean scores, with moderate variability across participants. Sense of community showed a wider distribution of scores compared to other instructional domains, reflecting greater variability in participant responses (Table 2).

**Reliability of the Disengagement Measures**

The overall disengagement scale demonstrated excellent internal consistency (Cronbach's $\alpha = 0.91$). Subscale reliability coefficients ranged from $\alpha = 0.48$ to $\alpha = 0.85$, with lower estimates observed for shorter three-item instructional subscales.

### Correlates of Student Disengagement

Pearson correlation analyses showed very large and statistically significant correlations between total disengagement and core behavioral and motivational disengagement domains, including withdrawal intentions ($r = 0.78$), avoidance behaviors ($r = 0.74$), and motivation loss ($r = 0.79$). Psychological and contextual factors were also significantly correlated with total disengagement. Digital fatigue demonstrated a large correlation ($r = 0.67$), while mental well-being concerns showed a large correlation with disengagement ($r = 0.53$). Time-zone challenges and external demands had a medium correlation with total disengagement ($r = 0.46$). Instructional and social factors showed statistically significant medium to large correlations with total disengagement. Course design ($r = 0.42$), instructor presence ($r = 0.46$), and sense of community ($r = 0.42$) demonstrated medium correlations, whereas feedback quality showed a large correlation with disengagement ($r = 0.52$) (Table 3).

### Predictors of Student Disengagement

Multiple linear regression analysis was conducted to examine predictors of total disengagement while controlling for sociodemographic and academic variables. The overall model explained a substantial proportion of variance in disengagement ($R^2 = 0.87$). Psychological and contextual factors emerged as the strongest predictors of disengagement, with higher levels of digital fatigue, greater mental well-being burden, and greater time-zone and external demands each independently predicting higher disengagement scores.

Instructional and social factors also contributed significantly to the prediction of disengagement. Greater perceived challenges related to course design, instructor presence, feedback quality, and sense of community each independently predicted higher levels of disengagement after adjusting for demographic characteristics. Among sociodemographic variables, full-time employment significantly predicted higher disengagement, whereas older age ($\geq$ 55 years) predicted lower disengagement compared to younger age groups. Gender, level of study, course load, and caregiving responsibilities did not emerge as significant predictors in the final model (Table 4).

## Discussion

This study sought to identify key predictors of student disengagement in fully online higher education programs by examining behavioral, psychological, instructional, and contextual factors within a globally diverse sample of online students. The findings support the view that

disengagement in online education is not linked to a single domain, but instead reflects the combined influence of psychological strain, instructional experiences, and external demands. The findings are consistent with and extend existing models of student engagement by highlighting the role of digital fatigue and mental well-being alongside instructional and structural factors.

**Overall Levels of Disengagement in Fully Online Programs**

Overall disengagement levels in the present sample were low to moderate, with mean scores below the midpoint of the five-point scale. This finding is consistent with prior research suggesting that many online students remain formally enrolled while still experiencing meaningful psychological or motivational strain [5,6]. Disengagement in online learning is increasingly understood as a continuum rather than a binary outcome, with early disengagement often manifesting as fatigue, emotional exhaustion, or reduced cognitive investment prior to overt withdrawal [4]. The relatively lower mean scores observed for withdrawal intentions and avoidance behaviors may suggest that most participants had not yet progressed to overt disengagement. However, higher scores in psychological domains indicate that disengagement-related strain may already be present even when students remain formally enrolled. This pattern supports prior conceptualizations of disengagement as a preceding condition to dropout, rather than an equivalent outcome [5,18].

**Behavioral and Motivational Dimensions of Disengagement**

Correlations with large effect sizes were observed between total disengagement and core behavioral and motivational domains, including withdrawal intentions, avoidance behaviors, and loss of motivation. These findings were expected, given that the total disengagement score combines multiple disengagement-related behaviors and attitudes. The strength of these correlations highlights the internal consistency of disengagement as a concept. This pattern is consistent with prior empirical work demonstrating that motivational decline and avoidance behaviors are among the strongest indicators of emerging disengagement in online modes of delivery [4,9]. In general, these findings support the idea that disengagement is not limited to course withdrawal or non-completion, but includes intermediate states characterized by reduced motivation, passive participation, and task avoidance [19]. Identifying these early signals may be critical for timely intervention, particularly in asynchronous online environments where disengagement may otherwise remain invisible to instructors.

**Psychological and Contextual Contributors to Disengagement**

Psychological and contextual factors were among the strongest correlates and predictors of disengagement. Digital fatigue was strongly correlated with disengagement, and mental well-being concerns were also strongly correlated with it. These findings are consistent with prior research on digital fatigue, cognitive overload, and emotional exhaustion in technology-mediated environments [11,12]. The sustained use of digital platforms, prolonged screen exposure, and continuous cognitive engagement required in fully online modes of delivery may place demands on students' attentional and emotional resources. Prior studies have shown that such demands can reduce concentration, increase irritability, and impair self-regulation, all of which may contribute to disengagement over time [11]. The present findings support this literature by demonstrating that digital fatigue remains a predictor of disengagement even after accounting for instructional quality and sociodemographic variables.

Time-zone challenges and external demands were also moderately correlated with disengagement and remained significant predictors in the regression model. This finding is particularly relevant for globally distributed online programs and international students. Prior work has shown that asynchronous schedules, misaligned deadlines, and competing work or caregiving responsibilities can undermine students' ability to maintain consistent engagement [10]. Together, these results highlight disengagement as a phenomenon shaped not only by course design but by broader structural and temporal restrictions faced by online students.

**Instructional and Social Factors in Online Disengagement**

Instructional and social factors demonstrated medium to large correlations with disengagement, indicating that perceived challenges related to course design, instructor presence, feedback quality, and sense of community remain important contributors to students' engagement experiences. These findings are consistent with the Community of Inquiry framework, which emphasizes the importance of teaching presence, social presence, and cognitive presence in sustaining engagement in online modes of delivery [8]. Course design clarity and instructor presence were moderately correlated with disengagement, suggesting that ambiguity, inconsistent communication, or perceived instructor unavailability may increase the risk of disengagement. Prior work has consistently shown that clear structure, timely communication, and visible instructor involvement are correlated with higher engagement and satisfaction in online modes of delivery [9,10].

Feedback quality showed a large correlation with disengagement, highlighting the central role of timely and meaningful feedback in supporting motivation and persistence. Feedback serves not only an instructional role but also a motivational and relational role by showing instructor investment and helping students stay engaged with their learning [9]. Sense of community showed a moderate correlation with disengagement, with greater variability across participants, suggesting that social connection may be experienced unevenly in fully online modes of delivery.

## Sociodemographic and Background Variables

Among sociodemographic variables, full-time employment predicted higher disengagement, while older students (aged 55 years and above) predicted lower disengagement. The relationship between employment and disengagement is consistent with prior findings indicating that competing work demands can constrain time, energy, and cognitive resources available for studying [2]. In contrast, lower disengagement among older students may reflect greater independent learning skills, goal clarity, or intrinsic motivation, characteristics often observed among mature students in higher education [5]. Other sociodemographic or background variables, including gender, level of study, course load, and caregiving responsibilities, were not significant predictors in the final regression model. This suggests that disengagement in online learning may be shaped less by static sociodemographic variables than by dynamic psychological, instructional, and contextual factors.

## Implications for Online Higher Education Practice

The findings of this study have several practical implications for institutions and educators offering and delivering fully online programs. First, interventions aimed at reducing disengagement should extend beyond course design improvements to address digital fatigue and mental well-being. Incorporating flexibility in deadlines, reducing unnecessary screen-based activities, and promoting well-being resources may help mitigate disengagement risk. Second, instructional practices that enhance instructor presence, feedback quality, and clarity of course structure remain essential. Regular communication, transparent expectations, and timely feedback may serve as protective factors against disengagement, particularly for students experiencing external pressures. Finally, institutions serving international and globally distributed students should consider time-zone flexibility and workload alignment as part of inclusive course design.

Structural adjustments at the program level may be necessary to support sustained engagement among students facing temporal and contextual restrictions.

## Limitations and Future Research

Several limitations should be acknowledged. The cross-sectional design precludes causal inference, and all measures were self-reported, which may introduce response bias. The sample, while geographically diverse, may not be fully representative of all online higher education contexts. Future longitudinal research is needed to examine disengagement trajectories over time and to assess whether early psychological strain predicts later behavioral withdrawal. Future studies could explore intervention-based designs to test strategies aimed at reducing digital fatigue and enhancing mental well-being in online learning environments. Qualitative research may also provide deeper insight into students' lived experiences of disengagement and re-engagement.

## Conclusion

This study examined predictors of student disengagement in fully online higher education programs by integrating behavioral, psychological, instructional, and contextual factors in a globally diverse sample of online students. The findings indicate that disengagement is best understood as a multidimensional phenomenon shaped by the combined influence of psychological strain, instructional experiences, and external demands rather than by sociodemographic variables alone. Psychological and contextual factors, particularly digital fatigue, mental well-being burden, and time-zone and external demands, emerged as the strongest predictors of disengagement, while instructional and social factors such as course design clarity, instructor presence, feedback quality, and sense of community also independently contributed to disengagement levels.

These results highlight the importance of addressing disengagement proactively, before it manifests as overt withdrawal. Interventions aimed at reducing disengagement in fully online programs should extend beyond instructional improvements to include strategies that mitigate digital fatigue, support student well-being, and accommodate diverse temporal and contextual restrictions.

**Table 1:** *Participant Characteristics (N = 140)*

| Characteristic | n | % |
|---|---|---|
| **Gender** | | |
| Female | 65 | 46.4 |
| Male | 75 | 53.6 |
| **Age group** | | |
| 18–24 | 58 | 41.4 |
| 25–34 | 52 | 37.1 |
| 35–44 | 22 | 15.7 |
| 45–54 | 6 | 4.3 |
| ≥55 | 2 | 1.4 |
| **Ethnicity** | | |
| White / Caucasian | 83 | 59.3 |
| Black / African American | 38 | 27.1 |
| Asian / Pacific Islander | 14 | 10.0 |
| Hispanic / Latino | 2 | 1.4 |
| Other | 3 | 2.1 |
| **Marital status** | | |
| Single, never married | 82 | 58.6 |
| Married | 31 | 22.1 |
| Living with a partner | 20 | 14.3 |
| Separated | 4 | 2.9 |
| Divorced | 3 | 2.1 |
| **Household income (USD)** | | |
| < $20,000 | 48 | 34.3 |
| $20,000–39,999 | 39 | 27.9 |
| $40,000–59,999 | 19 | 13.6 |
| $60,000–79,999 | 7 | 5.0 |
| $80,000–99,999 | 7 | 5.0 |
| ≥ $100,000 | 10 | 7.1 |
| Prefer not to say | 10 | 7.1 |
| **Continent of residence** | | |
| Europe | 39 | 27.9 |
| North America | 45 | 32.1 |
| South America | 5 | 3.6 |
| Asia | 20 | 14.3 |
| Africa | 25 | 17.9 |
| Australia | 6 | 4.3 |
| **International student** | | |
| No | 40 | 28.6 |
| Yes | 100 | 71.4 |
| **Level of study** | | |
| Undergraduate (Bachelor's) | 69 | 49.3 |
| Postgraduate (Master's) | 50 | 35.7 |
| Doctoral (PhD or equivalent) | 18 | 12.9 |
| Advanced diploma | 1 | 0.7 |
| Associate degree | 2 | 1.4 |
| **Year of study** | | |
| 1st year | 48 | 34.3 |
| 2nd year | 56 | 40.0 |
| 3rd year | 26 | 18.6 |
| 4th year or above | 10 | 7.1 |
| **Field of study** | | |
| Arts & Humanities | 26 | 18.6 |
| Business & Economics | 41 | 29.3 |
| Education | 10 | 7.1 |
| Engineering & Technology | 29 | 20.7 |
| Health Sciences | 22 | 15.7 |
| Life Sciences | 6 | 4.3 |
| Physical Sciences | 1 | 0.7 |
| Social Sciences | 5 | 3.6 |
| **University type** | | |
| Public | 85 | 60.7 |
| Private | 52 | 37.1 |
| Unknown | 3 | 2.1 |
| **Course load** | | |

| | | |
|---|---|---|
| Part-time | 41 | 29.3 |
| Full-time | 99 | 70.7 |
| **Employment status** | | |
| Not working | 74 | 52.9 |
| Working part-time | 25 | 17.9 |
| Working full-time | 41 | 29.3 |
| **Caregiving responsibilities** | | |
| No | 80 | 57.1 |
| Yes | 60 | 42.9 |
| **Weekly study time** | | |
| < 5 hours | 29 | 20.7 |
| 5–10 hours | 59 | 42.1 |
| 11–15 hours | 37 | 26.4 |
| > 15 hours | 15 | 10.7 |
| **Internet access** | | |
| No | 3 | 2.1 |
| Yes | 134 | 95.7 |
| Sometimes | 3 | 2.1 |
| **Dedicated workspace** | | |
| No | 12 | 8.6 |
| Yes | 118 | 84.3 |
| Sometimes | 10 | 7.1 |
| **Dedicated study time** | | |
| No | 14 | 10.0 |
| Yes | 106 | 75.7 |
| Sometimes | 20 | 14.3 |
| **Prior fully online course experience** | | |
| No | 34 | 24.3 |
| Yes | 105 | 75.0 |
| Not sure | 1 | 0.7 |
| **Primary device used for study*** | | |
| Laptop | 114 | 81.4 |
| Desktop | 16 | 11.4 |
| Tablet | 5 | 3.6 |
| Smartphone | 5 | 3.6 |

**Table 2:** *Descriptive Statistics for Disengagement Scores (N = 140)*

| Disengagement domain | Mean | SD | Min | Max |
|---|---|---|---|---|
| **Total disengagement** | 2.39 | 0.48 | 1.07 | 4.07 |
| **Withdrawal / low participation** | 1.86 | 0.74 | 1.00 | 4.00 |
| **Passive engagement** | 2.24 | 0.84 | 1.00 | 5.00 |
| **Avoidance / missed work** | 2.04 | 0.92 | 1.00 | 5.00 |
| **Digital fatigue and burnout** | 2.83 | 0.79 | 1.00 | 4.67 |
| **Motivation loss** | 2.03 | 0.69 | 1.00 | 4.33 |
| **Course design** | 1.93 | 0.68 | 1.00 | 4.00 |
| **Instructor presence** | 2.15 | 0.77 | 1.00 | 4.33 |
| **Feedback quality** | 2.20 | 0.71 | 1.00 | 4.33 |
| **Sense of community** | 2.46 | 1.05 | 1.00 | 5.00 |
| **Mental well-being** | 3.22 | 0.83 | 1.00 | 5.00 |
| **Time-zone / external demands** | 2.81 | 0.75 | 1.00 | 4.20 |

**Table 3:** *Correlations Between Total Disengagement and Disengagement Domains*

| Disengagement domain | r |
|---|---|
| Withdrawal / low participation | 0.78 |

| | |
|---|---|
| Passive engagement | 0.63 |
| Avoidance / missed work | 0.74 |
| Motivation loss | 0.79 |
| Digital fatigue | 0.67 |
| Mental well-being | 0.53 |
| Time-zone / external demands | 0.46 |
| Course design | 0.42 |
| Instructor presence | 0.46 |
| Feedback quality | 0.52 |
| Sense of community | 0.42 |

Pearson correlation coefficients; all correlations significant at $p < 0.05$.

**Table 4:** *Multiple Linear Regression Predicting Total Disengagement (N = 140)*

| **Predictor** | **B** | **SE** |
|---|---|---|
| **Psychological / contextual factors** | | |
| Digital fatigue | 0.25** | 0.03 |
| Mental well-being | 0.11** | 0.03 |
| Time-zone / external demands | 0.14** | 0.03 |
| **Instructional / social factors** | | |
| Course design | 0.15** | 0.03 |
| Instructor presence | 0.11** | 0.03 |
| Feedback quality | 0.08* | 0.03 |
| Sense of community | 0.14** | 0.02 |
| **Key background factors** | | |
| Full-time employment | 0.16** | 0.05 |
| Age ≥ 55 years | -0.25* | 0.10 |

B = unstandardized coefficient; SE = robust standard error.

*$p < 0.05$

**$p < 0.01$

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