

# An ecological model of dropout intention in university students during the covid-19 pandemic

## Un modelo ecológico de la intención de deserción en estudiantes universitarios durante la pandemia por covid-19




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REPORT**  
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### Resumen

**Objetivo:** Analizar la intención de deserción de los estudiantes universitarios tras seis meses de confinamiento en casa durante la pandemia por covid-19 a partir de un modelo ecológico.

**Método:** Estudio transversal no experimental con un muestreo intencional de 1011 estudiantes universitarios activos durante 2020. Con edades comprendidas entre los 18 y los 54 años ( $M = 22,6$ ;  $DE = 4,8$ ; mujeres = 438). Los estudiantes respondieron el cuestionario de abandono universitario para estudiantes, la Escala de Depresión, Ansiedad y Estrés, la Escala de Miedo de covid-19, la Escala de Síndrome de Ansiedad de covid-19 y el cuestionario de Satisfacción con los cambios académicos. Se realizó un análisis descriptivo y multivariante de los datos.

**Resultados:** El modelo explica el 28 % de la varianza de la intención de deserción entre los estudiantes universitarios durante el confinamiento por covid-19 (sensibilidad = 86,8 %). La insatisfacción ante los cambios académicos es el principal predictor del modelo ( $OR = 0,960$ ;  $IC\ 95\ \% [0,950, 0,959]$ ). Otros predictores significativos son las interacciones positivas y negativas (i.e., en el entorno familiar, social y académico), los síntomas emocionales negativos, la ansiedad ante la covid-19, ser mayor, estudiar en una universidad privada y tener un familiar diagnosticado con covid-19.

**Conclusiones:** Los cambios en el macrosistema (i.e., el confinamiento en el hogar y las clases en línea) durante los primeros seis meses de la pandemia por covid-19 modificaron la interacción de los estudiantes con sus sistemas proximales y surgieron nuevos predictores de la intención de abandono (e.g., ansiedad ante la covid-19 y tener un familiar diagnosticado con covid-19), asociados al contexto de confinamiento.

**Palabras clave:** deserción estudiantil, factores ecológicos; estudiantes; apoyo social; universidades; covid-19.

### Abstract

**Objective:** To analyse the drop out intention of university students after six months of home confinement during the covid-19 pandemic using an ecological model.

**Method:** A non-experimental cross-sectional study with an intentional sampling of 1,011 active university students during 2020. Aged between 18 and 54 years ( $M = 22,6$ ;  $SD = 4,8$ ; female = 438). We evaluated them with the university dropout questionnaire for students, Depression, Anxiety and Stress Scale, Fear of covid-19 Scales, covid-19 Anxiety syndrome scale, and the Satisfaction with academic changes questionnaire. We performed a descriptive and multivariate analysis of the data.

**Results:** The model explain 28 % of drop out intention among university students during confinement by covid-19 (sensitivity = 86,8 %). Dissatisfaction with academic changes is the main predictor of the model ( $OR = 0,960$ ;  $IC\ 95\ \% [0,950, 0,959]$ ). Other significant predictors are positive and negative interactions (i.e., in family, social, and academic environments), negative emotional symptoms, anxiety about

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covid-19, being older, studying at a private university, and having a family member diagnosed with covid-19.

**Discussions:** Macrosystem changes (i.e., home confinement and online classes) during the first six months of the covid-19 pandemic modified the students' interaction with their proximal systems and new predictors of the intention to drop out emerged (e.g., anxiety about covid-19 and having a family member diagnosed with covid-19), associated with the context of confinement.

**Keywords:** drop out, ecological factors; students; social support; universities; covid-19.

## 1. INTRODUCTION

The intention to drop out of university is a multivariate and multidimensional process (Tinto, 1989). The ecological theory of human development (Bronfenbrenner, 1979; Bronfenbrenner & Morris, 2006) explains how dropout intentions increase through the college students' interactions with their proximal and distal systems, which enhance the possibilities to learn and develop. For this study, it is argued that the interactions between microsystems change in the context of a pandemic and, therefore, new predictors emerge which explain the intention of university students to drop out.

Bronfenbrenner and Morris (2006) argue that an individual's perceptions and interpretations of their experiences are based on the costs and benefits of their participation within different systems and the achievement of their expectations; this leads to a reorganization of their behaviour. For this study, we use three types of nested systems defined by Bronfenbrenner: microsystems (those agents with whom the student interacts directly, i.e., family, peers, teachers, college staff), mesosystems (i.e., relationships between microsystem agents), and the macrosystems (structures that affect the students' learning i.e., institutional curricular support). We hypothesize that the variables which emerge as the consequence of the context of the pandemic (i.e., fear and anxiety regarding covid-19, having a family member with covid-19, and dissatisfaction with academic changes) would become the main predictors of the intention to drop out. Specifically, pandemic context variables would modify the predictors associated with the students' microsystems (i.e., academic self-efficacy, vocational choice, and negative affective symptoms).

Lohman *et al.* (2007) argue that when college students perceive mismatches in achieving their vocational training expectations, this affects their decision to drop out because they identify difficulties in the interactions with the agents of each system (e.g., the microsystem, mesosystem, and macrosystem). For instance, when students perceive poor quality vocational training, little

curriculum relevance and inadequate teacher feedback, they evaluate these interactions as conditions that can affect their professional competencies or job possibilities and, as a result, there is an increase in the student intention to drop out because of the perceived inconsistencies between the graduation profile and labour demand.

The multiplicity of determinants involved in dropping out are associated with the developmental dimensions of different students, the way they direct their behaviour, and participate in academic and social systems (Jones, 2017). For instance, Mendoza *et al.* (2015) found that during the Great Recession in the United States, between 2007 and 2009, the anxiety levels of college students increased, associated with distal systems, such as the financial situation in the country and around the world, educational financial policies, and concern about student loans. Notwithstanding, college student retention was associated with a greater use of attention networks for counselling or career coaching (to deal with distress and pressure) and higher levels of engagement and academic involvement among the students to complete their activities and academic commitments.

In the same way, Arana *et al.* (2011) analysed a group of Hispanic college students in the USA that interacted in environments with higher academic and research demands (i.e., macrosystem variables). They reported that college students persisted with their studies because they received support from family, faculty members, and administrative staff (i.e., mesosystem variables) and enjoyed a good organizational climate. Similarly, (Navarro-Roldán, 2022) found that among Colombian university students, their intention to drop out increased when they perceived inconsistencies in fulfilling their vocational training. The indicators which were found to be consequential were the following, listed in their respective system levels: on a microsystem level, vocational decision making without enough information, emotional distress due to university experiences, financial insecurity in covering weekly expenses, and being enrolled in first year at a private university; on a mesosystem level, negative and positive interactions with family, peers, teachers or university staff and dysfunctional institutional support networks when they were victims of violence or bullying; and on a macrosystem level, the perception of ineffective academic support, low self-competence (in final year students), a low evaluation of educational quality, and being enrolled in a course of studies with higher dropout rates.

### 1.1. The intention to drop out of university during the covid-19 pandemic

The emergence of SARS-CoV-2 during 2020 affected people's lives around the world. According to recent public health policies, people were required to be confined in their homes and, around 100 countries cancelled face-to-face classes to reduce the contagion rate and mortality caused by covid-19. These new regulations changed the learning environment and generated new challenges for academic training. At the same time, these changes increased academic dissatisfaction (Debbarma & Durai, 2021), psychological distress, negative affect states, and mental health problems among university students (Fu *et al.*, 2021; Li *et al.*, 2021; Pandita *et al.*, 2020; Sánchez-Teruel *et al.*, 2021), as well as the intention to abandon studies (Wild & Heuling, 2020).

Due to covid-19 regulations, student interaction with proximal and distal systems changed. Therefore, new psychological variables emerged, such as fear of being infected (Fu *et al.*, 2021) and academic dissatisfaction (especially among students of practical subjects). Higher levels of anxiety about being infected were associated with being a student with practical subjects, having parents with a low educational level, financial worries, and a low perception of social support (Fu *et al.*, 2021), or perceptions of delays in their academic activities and low social support (Cao *et al.*, 2020).

The main stress factors reported were concerns for the health of both the individuals and their families, difficulties in concentrating, changes in sleeping habits, social withdrawal, pressure to obtain high academic achievement, inadequate eating habits, changes in routines, financial difficulties, classwork overload, and depressive and suicidal thoughts (Son *et al.*, 2020). Also, an increase in depressive symptoms was identified in students who reduced their physical activity during confinement (Copeland *et al.*, 2021), and more negative affect, anxiety, and symptoms of depression when students perceive that confinement can delay the curriculum and there is a lack of state support for biosecurity measures (Li *et al.*, 2021).

On the other hand, Wang *et al.* (2020) found that college students showed low or moderate stress levels related to academic pressure and classwork overload because of the challenge of the transition process from face-to-face classes to *online* classes. The main concerns reported were maintaining class quality, getting high grades, solving technical problems related to connectivity or *online* apps, difficulties learning *online*, research limitations, delays in-class projects, difficulties with group work, and a lack of face-to-face support from instructors or teaching assistants. In Colombia (Pérez, 2020),

during confinement, university students reported high levels of academic dissatisfaction related to *online* classes (76 % for public and 54 % for private institutions) and to learning outcomes (78 % for public and 55 % for private institutions).

In synthesis, previous studies show that confinement in the covid-19 pandemic context increased college students' vulnerability to displaying more negative affect symptoms and difficulties in adapting to academic changes. Students with higher negative affect showed lower academic achievement, more difficulty in reaching learning goals, less academic persistence, and poor social integration (Al-Dwaikat *et al.*, 2020; Fu *et al.*, 2021). At the same time, educational context changes, such as the abrupt transition to *online* classes, the necessity to adopt new routines and solve technical problems related to connectivity increased the students' feelings of worry and stress (Wang *et al.*, 2020).

## 1.2. Current study

The main objective of this study is to identify the best predictors of the intention to drop out among college students after 6 months of *online* classes and home confinement between March- September 2020. The ecosystem perspective is used to explain the intention to drop out as the student's perception of inconsistencies in achieving their vocational training expectations. These inconsistencies are formed through the students' interactions with their proximal (micro-meso) and distal (meso-macro) systems (Bronfenbrenner & Morris, 2006; Jones, 2017; Navarro-Roldán, 2022). In a pandemic context, the inconsistencies are associated with the costs generated by academic changes made to reduce covid-19 infection risk and the benefits of continuing their university studies. For instance, to study or protect their health, self-isolate or interact with their peers, do face-to-face or virtual work placement, take *online* classes, or wait for the return to face-to-face classes.

Public health measures to avoid covid-19 infection have affected the interaction dynamics of university students with their systems. Hence, it is necessary to identify the variables that affect the intention to drop out and which could be used to predict it. We suggest that the microsystem level dropout predictors (i.e., academic self-efficacy, vocational choice, and negative affective symptoms) previously identified (Navarro-Roldán, 2022), will not have a significant effect on the model. On the contrary, new pandemic context variables such as fear or anxiety about covid-19, having a family member with covid-19, and dissatisfaction with academic changes (i.e., from

face-to-face classes to *online* classes) all increase the intention to drop out. Furthermore, mesosystem variables (i.e., positive, and negative microsystem interactions) and macrosystem variables (i.e., ineffective curricular support) will be significant predictors, but with less power in comparison to the variables which emerge because of the pandemic context.

## 2. METHOD

### 2.1. Design

A non-experimental study with a cross-sectional design was carried out to predict the intention to drop out of university during the home confinement period of the covid-19 pandemic.

### 2.2. Instruments

*Dropout intention.* In order to know if the student intended to quit, the following question was posed: “Have you thought of dropping out of your university studies?” university. The answers (Yes/No) were codified as an independent variable for the study.

*Demographic variables.* Students were asked questions to find out about variables related to individual characteristics (sex, age), as well as academic (years completed, university type), assistance (psychological and economical support), and sickness variables (covid-19 diagnosis within the family nucleus). These variables were used as a control within the model.

*Dropout risk perception.* We used the university dropout questionnaire for students (CDUe, by its acronym in Spanish; Navarro-Roldan & Zamudio, 2021), which is based on the ecological theory of human development. It evaluates the perception of dropout risk based on the students’ perception of inconsistencies across six factors grouped into three dimensions: microsystem [self-efficacy ( $\alpha = 0,909$ ) and vocational choice ( $\alpha = 0,912$ )], mesosystem [functional ( $\alpha = 0,807$ ) and dysfunctional network support ( $\alpha = 0,790$ )] and macrosystem [curricular support ( $\alpha = 0,885$ ) and work insertion ( $\alpha = 0,914$ )]. It contains 63 items and a five-point Likert scale (0 = disagree to 4 = agree). High scores on each scale imply a higher perception of inconsistencies for each factor. For this study, we did not use the work insertion scale.

*Negative emotional symptoms.* We used the Depression, Anxiety and Stress Scales; DASS-21 (Lovibond & Lovibond, 1996) brief Spanish version (Ruiz *et al.*, 2017) to evaluate the severity or frequency of symptoms of depression, anxiety, and stress during the previous week. 21 items were rated on a

four-point Likert scale (0 = did not apply to 3 = applied most of the time). In the present study, the internal reliability is of adequate levels for all the dimensions (depression  $\alpha = 0,92$ , anxiety  $\alpha = 0,86$ , and stress  $\alpha = 0,88$ ).

*Fear of covid-19.* This was measured using the Fear of covid-19 Scale (FCV-19S) (Soraci *et al.*, 2020) a self-report instrument that evaluates seven items (e.g., my hands become clammy when I think about the coronavirus) using a five-item Likert-type scale (1 = strongly disagree to 5 = strongly agree). For this study, an Exploratory Factor Analysis (EFA) revealed that the items of the scale explain 57 % of the fear of being sick with covid-19 variance. The test validation showed factorial rates above 0,60, adequate adjustment indexes [KMO = 0,857; Bartlett ( $\chi^2 = 4757,825$ ;  $df = 21$ ;  $p < 0,001$ )] and a high level of reliability ( $\alpha = 0,898$ ).

*Anxiety about covid-19.* We used the self-report (C-19ASS) (Nikčević & Spada, 2020) which evaluates two anxiety dimensions: perseverative thinking [6 items, e.g., I have avoided talking about the coronavirus (covid-19)] and avoidance [3 items; I have avoided touching things in public spaces because of the fear of contracting the coronavirus (covid-19)]. Items were rated on a four-point Likert scale (0 = Not at all to 4 = Nearly every day). We translated the original English version into Spanish and vice versa. The EFA revealed that the items explain 44,2 % of the variance of anxiety about becoming sick with covid-19. Factorial rates above 0,60, were grouped in one dimension [KMO = 0,889, Bartlett ( $\chi^2 = 3785$ ;  $df = 36$ ;  $p < 0,001$ )] and showed a high level of reliability ( $\alpha = 0,874$ ). The Confirmatory Factorial Analysis (CFA) shows adequate fit indexes [CFI = 0,99; TLI = 0,99; SRR = 0,026; RMSEA = 0,020 (90 % IC = 0,000 – 0,045)].

*Satisfaction with academic changes.* A questionnaire with 26 items was developed to evaluate the level of satisfaction of university students with academic changes. It contains two dimensions: professional education expectations (13 items) and curricular features (9 items). Items were rated on a five-point Likert scale (0 = not satisfied at all, to 4 = very satisfied). We used a sample of 30 % of the total participants to conduct an EFA. The EFA showed an adequate fit model [KMO = 0,964; Bartlett ( $\chi^2 = 0,964$ ;  $df = 325$ ;  $p < 0,001$ )], all items presented factorial loads above 0,40, and they were grouped into two factors (i.e., individual, and curricular aspects), which explained 54 % of the variance of satisfaction with academic changes. The CFA reveals an adequate fit for a hierarchical model with a general factor and two second-order factors [ $\chi^2 = 1451,706$ ; CFI = 0,923; TLI = 0,903; AIC = 53019,545; RMSEA = 0,082 (90 % CI = 0,079 – 0,086)].

### 2.3. Participants

We intentionally sampled 1011 students from different Colombian universities aged between 18 and 54 years ( $M = 22,6$ ;  $SD = 4,8$ ). The sociodemographic variables are presented in Table 1. The selection criteria were a) being 18 years old or over, b) being an active student during 2020, c) being students with face-to-face classes who changed to *online* classes, and d) being confined to the home. During the first six months of the pandemic, most students reported not having had a covid-19 diagnosis (77,1 %) within the family group, only 15 % reported having had at least one infected family member, 4,4 % had a family member hospitalized and 3,5 % had lost someone from their family. Students reported that they received psychological treatment from the university (8,7 %) and a tuition discount (3,5 %). Students reported not having been positively diagnosed when they answered the questionnaires.

### 2.4. Procedure

University students who enrolled during 2020 completed a survey from a set of questionnaires. The survey was administrated using the Google Forms platform, and it was distributed through e-mail and social media apps. The data collection process lasted 42 days, from september 17 to october 22 of 2020. A total of 1038 answers were obtained, out of which 24 were excluded because they were incomplete.

The survey included a consent form that described the conditions of participation. It included the main objective of the study, the fact that participation was voluntary and unpaid, as well as the conditions of anonymity, confidentiality, and the right to withdraw. During the research process, we followed ethical protocols related to data security, disclosure, and appropriate use.

### 2.5. Statistical analysis

First, we examined whether the data fulfilled assumptions using the Kolmogorov-Smirnov and Levene's test. For a descriptive analysis, a non-parametric analysis was used, comparing students with and without an intention to drop out of the university. To verify the fit indexes for the measurement instruments, we conducted an EFA, a CFA, and calculated the reliability coefficients. For the predictive model, we used a logistic regression by backward stepwise with a Likelihood Ratio to measure the relationship between an intention to drop out and the predictor variables. We performed all statistical analyses using SPSS version 24.



### 3. RESULTS

#### 3.1. Descriptive analysis

Chi-square analysis indicated that there is a relation between the intention to drop out group and the type of university, socioeconomic status, and course of studies (Table 1). There are a greater number of students with an intention to drop out who have the following characteristics: attend a public university, have a low socioeconomic income, have no financial support, have had a family member with a covid-19 diagnosis, and are enrolled in any course of studies.

**Table 1.**

Descriptive analysis of socio-demographic characteristics.

VARIABLES	TOTAL (%)	DROPOUT INTENTION		X <sup>2</sup>	
		WITHOUT (%)	WITH (%)		
Gender					
Female	438 (43,3)	221 (58,9)	352 (55,3)	1,236	
Male	373 (56,7)	154 (41,1)	284 (44,7)		
University type					
Public	904 (10,6)	320 (85,3)	584 (91,8)	10,502**	
Private	107 (89,4)	55 (14,7)	52 (8,2)		
Residency					
Urban	779 (77,1)	292 (77,9)	487 (76,6)	0,224	
Rural	232 (22,9)	83 (22,1)	149 (23,4)		
Socioeconomic status					
Low	680 (67,2)	233 (62,1)	447 (70,3)	12,275*	
Medium	306 (30,3)	126 (33,6)	180 (28,3)		
High	25 (2,5)	16 (4,3)	9 (1,4)		
Course of study					
Agronomy, Vet. Sci. and related	37 (3,7)	9 (2,4)	28 (4,4)	27,644*	
Arts	23 (2,3)	9 (2,4)	14 (2,2)		
Educational sciences	70 (6,9)	24 (6,4)	46 (7,2)		
Health sciences	185 (18,2)	93 (24,8)	92 (12,5)		
Social and human sciences	139 (13,7)	37 (9,9)	102 (16,0)		
Economics. Administration	172 (17,0)	64 (17,1)	108 (17,0)		
Engineering. Architecture. Urban planning	227 (22,5)	79 (21,1)	148 (23,1)		
Mathematics and natural sciences	96 (9,5)	31 (8,3)	65 (10,2)		
Technical degree	27 (2,7)	14 (3,7)	13 (2,0)		
Technological degree	35 (3,5)	15 (4,0)	20 (3,1)		
Psychological support					
Yes	88 (8,7)	35 (9,3)	53 (8,3)		0,297
No	923 (91,3)	340 (90,7)	583 (91,7)		
Financial support					
Yes	39 (3,9)	22 (5,9)	17 (2,7)	6,488*	
No	972 (96,1)	353 (94,1)	619 (97,3)		
Family member w/ covid-19 diagnosis					
Yes	231 (22,8)	70 (18,7)	161 (25,3)	5,914*	
No	780 (77,2)	305 (81,3)	475 (74,7)		

Note. \*  $p < 0,05$ ; \*\*  $p < 0,001$

We found significant median differences between students with and without an intention to drop out during the covid-19 confinement period. Students with an intention to drop out (62,9 %) show higher median scores than students without an intention to drop out (37,09 %) in all the variables studied, except years completed and age (Table 2).

**Table 2.**

Descriptive statistics of continuous model predictors.

PREDICTORS (CONTINUOUS)	DROP OUT INTENTION			95 % IC		
	NO (N = 375)	YES (N = 636)	U	RBIS	LOWER	UPPER
Academic self-efficacy	12,00	20,00	84201,500**	-0,297	-0,363	-0,229
Misinformed vocational choice	2,00	5,00	99498,000**	-0,170	-0,240	-0,097
Positive interactions	20,00	26,00	159992,500**	0,335	0,268	0,399
Negative interactions	4,00	7,00	88720,500**	-0,260	-0,327	-0,190
Ineffective curricular support	16,00	24,00	82849,000**	-0,309	-0,374	-0,240
Negative emotional symptoms	18,00	28,00	80476,000**	-0,328	-0,392	-0,261
Fear of covid-19	13,00	14,00	107886,500*	-0,100	-0,172	-0,026
Anxiety about covid-19	15,00	17,00	109655,500*	-0,085	-0,157	-0,011
Academic changes satisfaction	44,00	31,00	176664,000**	0,475	0,415	0,530
Years completed	3,00	3,00	115212,000	-0,038	-0,112	0,035
Age	21,00	21,00	121317,500	0,013	-0,061	0,086

Note. \* p < 0,05; \*\* p < 0,001

### 3.2. Predictive model

A backward stepwise logistic regression analysis was performed to verify the predictive value of the dropout intention model. The Omnibus Tests of Model Coefficients ( $\chi^2 = 239,976$ ;  $df = 16$ ;  $p = 0,000$ ) and Hosmer and Lemeshow test ( $\chi^2 = 6,933$ ;  $df = 8$ ;  $p = ,544$ ) indicated the analysis viability. The predictive model correctly classified 72,6 % of the cases with 86,8 % sensitivity. The regression model explains 28 % of the variance of the intention to drop out of university in the confinement context caused by covid-19 (verisimilitude logarithm -2 = 1099,280; Cox and Snell R square = 0,207; Nagelkerke R square = 0,282).

The eight-step model significantly predicts the students' intention to drop out. The pandemic context variables retained in the equation were dissatisfaction with academic changes, anxiety about covid-19, and having had someone in their family diagnosed with covid-19. The equation model excluded fear of covid-19. Also, the model included positive and negative interactions, the presence of negative emotional symptoms, being of greater age, and being enrolled in a private university. Financial support was not a significant predictor (Table 3).

**Tabla 3.**

Logistic regression model.

EQUATION VARIABLES	B	STANDARD ERROR	WALD	DL	SIG.	OR	95 % IC	
							LOWER	HIGHER
Academic change satisfaction	-0,041	0,005	67,980	1	0,000	0,960	0,950	0,969
Positive interactions	-0,042	0,010	17,848	1	0,000	0,959	0,940	0,978
Negative emotional symptoms	0,019	0,005	12,070	1	0,001	1,019	1,008	1,030
Negative interactions	0,037	0,014	7,201	1	0,007	1,038	1,010	1,067
Anxiety about covid-19	0,031	0,012	6,775	1	0,009	1,031	1,008	1,056
Age	0,037	0,016	5,066	1	0,024	1,037	1,005	1,071
Family member w/ covid-19 diagnosis	-0,393	0,185	4,526	1	0,033	0,675	0,470	0,970
Type of university (private)	0,490	0,231	4,496	1	0,034	1,633	1,038	2,569
Financial support	0,627	0,372	2,842	1	0,092	1,871	0,903	3,877
Constant	0,403	0,665	0,366	1	0,545	1,496		

Note. In step 8. the following were eliminated from the equation ( $p > 0,05$ ): Self-efficacy, vocational choice, ineffective curricular support, fear of covid-19, gender, years completed, and psychological support.

#### 4. DISCUSSION

According to our hypothesis, pandemic context variables significantly increase the likelihood of an intention to drop out among college students. Dissatisfaction with academic changes, anxiety about covid-19, and having a family member with covid-19 are dropout intention predictors. The logistic regression model reveals that dissatisfaction with academic changes is the main predictor of an intention drop out; specifically, having difficulties understanding topics, doing tasks or exams, non-compliance with the curriculum, disappointment with a teacher's training, and difficulties with the changes in methodology or pedagogy all increase the students' perception of the unfulfillment of vocational training expectations.

Previous studies show that, although some university students adapted to *online* classes, many had difficulties with learning demands (Wang *et al.*, 2020), delay in curriculum accomplishment (Li *et al.*, 2021), pressure due to the lack of face-to-face practicums (Fu *et al.*, 2021), less social support (Cao *et al.*, 2020), and internet connection difficulties or a lack of availability of digital resources (Chao *et al.*, 2020; Debbarma & Durai, 2021). The Interamerican Development Bank states that university students from some developed countries had previous trials of blended methodology which were functional and allowed for easy adaptation to academic changes during the confinement due to covid-19; as opposed to Latin-American students who had more diffi-

culties adapting due to the abrupt change to an *online* methodology and a lack of technology, digital resources, internet connectivity (Vincentini, 2020).

Regarding anxiety about covid-19, results indicate that a higher perceived threat of becoming infected affects the students' cost-benefit analysis of remaining enrolled in their degree course after 6 months of confinement. The students who reported greater concern used public transport or frequented public places, checked regularly for the presence of symptoms, engaged in rumination, negative thoughts about the future, social contact avoidance, and obsessive hygiene practices. These students had a higher probability of having an intention to drop out. Hence, displaying symptoms of anxiety related to being infected by covid-19 disturbed students' way of interacting with their environment (i.e., mesosystem and macrosystem), as well as their ability to cope with academic changes and to keep themselves healthy.

On the other hand, vocational choices and academic self-efficacy were not significant predictors of the intention to drop out at the microsystem level. However, negative emotional symptoms were perceived as a threat at the microsystem level, becoming a predictor of the intention to drop out with a higher value than anxiety about covid-19. Recent studies involving college students showed an increase in stress, anxiety, and depressive thoughts during covid-19 confinement (Asenjo-Alarcón *et al.*, 2021; Cao *et al.*, 2020; Copeland *et al.*, 2021; Fu *et al.*, 2021; Li *et al.*, 2021).

Before the covid-19 pandemic, Eisenberg *et al.* (2009) identified that higher negative emotional symptoms increase dropout risk. University students with depression, anxiety, or symptoms of stress use more maladaptive coping strategies, have less motivation and concentration, make less effort to begin academic tasks, and are less effective at achieving academic goals. These conditions affect students' interactions with their academic environment, their capacity to adapt to methodological changes, and their perception of the possibilities of achieving their vocational training expectations.

The current study hypothesized that positive and negative interactions (mesosystem level variables) and ineffective curricular support (macrosystem level variables) will have less predictive value than fear and anxiety regarding covid-19 and dissatisfaction with academic changes (pandemic context variables). In partial support of this hypothesis, we found that positive and negative interactions have a lower predictive value of an intention to drop out than dissatisfaction with academic changes, but these variables have a higher predictive value than anxiety about covid-19. College students who intend to

drop out perceive fewer positive interactions and more negative interactions from proximal microsystems (i.e., with their family, friends, professors, and administrative staff) than students who do not.

University students that have positive support relations with family members, friends, teachers, or university staff experience less emotional distress, greater subjective well-being, and satisfaction with life, and improve their capacity to adapt to a different context. At the same time, the intention to drop out is higher among university students with negative support relationships, as this kind of interaction distracts them from academic activities or does not protect them from bullying. Therefore, negative interactions and violence within the family or social context affect university students' capacity to adapt and obtain higher academic achievement.

In this study, even though university students with an intention to drop out perceive a greater threat from relations with their distal system (e.g., institutional resources, methodological strategies, pedagogic models) than students without an intention to drop out, the regression model indicates that ineffective curricular support is not a significant predictor of an intention to drop out. In pandemic contexts, university students have more concern about being able to focus, dealing with fatigue, understanding the subjects, achieving high scores, completing the full syllabus, and obtaining enough knowledge from their theoretical and practical classes through the *online* learning conditions than about resources and institutional policies which support their vocational training. Similar studies found that during covid-19 confinement, university students showed high levels of dissatisfaction with the quick transition from face-to-face to distance education, a significant lack of digital literacy, and the degree of professor involvement with tutoring and developing active methodologies (Wang *et al.*, 2020).

Our prediction model evidences that the control variables that increase the probability of an intention to drop out among the university students surveyed are age, being enrolled in a private university and having a family member with a covid-19 diagnosis. Similar findings were reported by (Fu *et al.*, 2021; Li *et al.*, 2021; Navarro-Roldán, 2022; Son *et al.*, 2020).

## 5. CONCLUSIONS

According to the findings of this study, macrosystem changes (i.e., home confinement and *online* classes) due to new policies and restrictions to

reduce covid-19 infections modified the way that university students interacted with their proximal systems (i.e., family, friends, professors, and university staff) and their perception of the possibilities of achieving their vocational training goals. The intention to drop out was mainly predicted by the perception of the university students of greater dissatisfaction with academic changes (microsystem), fewer positive interactions (mesosystem), and more negative affective symptoms (microsystem). Positive and negative interactions (mesosystem) have less predictive value than academic change dissatisfaction, but they have a higher predictive value than anxiety about covid-19 (microsystem).

Sociodemographic variables, such as age, being enrolled in a private university and having a family member with a covid-19 diagnosis increased the probability of having an intention to drop out. On the other hand, self-efficacy, a misinformed vocational choice, ineffective curricular support, fear of covid-19, gender, years completed, and psychological support were excluded from the predictive model. These results provide evidence for the importance of analysing how contextual changes affect university students' evaluation of their possibilities of achieving the expected quality of vocational training and remaining enrolled in university or not. Also, these results could be used to design new strategies and policies to mitigate the impact of the pandemic on university students who are a dropout risk.

### 5.1. Limitation and future studies

Some limitations of this study are related to the stability of these predictors over time, as it only used one assessment after six months of covid-19 confinement. Hence, we cannot analyse how changes related to mobility restriction and the fluctuations of infection spikes affect the intention to drop out. In our sample, university students did not have a covid-19 diagnosis, therefore, we could not measure the negative impact on the university students' decision to continue their studies.

Future studies could analyse the prediction model of the intention to drop out, including having been infected by covid-19 as a predictor, when university students return to face-to-face classes and post confinement effects on mental health and the intention to drop out have taken effect. Given the findings of this study, the uncertainty regarding the control of covid-19 infection, and the permanence of *online* classes, it is suggested that the adapted use of technologies and blended methodologies, as well as psycho-education accompaniment with students and their families, could improve

the educational experience and impact on the probability of deciding to drop out of university.

**Highlights (key points):** Public health measures to avoid covid-19 infection have affected university students' interaction with their social, family, and educational systems. During the first six months of home confinement, new predictors of the intention to drop out emerged: anxiety about covid-19 and having a family member diagnosed with covid -19. Higher dropout intention was associated with dissatisfaction with academic changes, positive and negative interactions, negative emotional symptoms, being older, and studying at a private university.

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## REFERENCES

- Al-Dwaikat, T. N., Aldalaykeh, M., Ta'an, W., & Rababa, M. (2020). The relationship between social networking sites usage and psychological distress among undergraduate students during covid-19 lockdown. *Heliyon*, 6(12), e05695. <https://doi.org/10.1016/j.heliyon.2020.e05695>
- Arana, R., Castañeda-Sound, C., Blanchard, S., & Aguilar, T. E. (2011). Indicators of persistence for hispanic undergraduate achievement: Toward an ecological model. *Journal of Hispanic Higher Education*, 10(3), 237–251. <https://doi.org/10.1177/1538192711405058>
- Asenjo-Alarcón, J. A., Linares-Vásquez, O., & Díaz-Dávila, Y. Y. (2021). Nivel de estrés y estilos de vida en profesionanles enfermería durante la pandemia de covid-19. *Revista Peruana de Investigación En Salud*, 5(2), 59–66. <https://doi.org/10.35839/repis.5.2.867>
- Bronfenbrenner, U. (1979). *The ecology of human development: Experiments by nature and design*. Harvard University Press.
- Bronfenbrenner, U., & Morris, P. A. (2006). The Bioecological Model of Human Development. In *Handbook of Child Psychology: Theoretical Models of Human Development* (pp. 793–828).
- Cao, W., Fang, Z., Hou, G., Han, M., Xu, X., Dong, J., & Zheng, J. (2020). The psychological impact of the covid-19 epidemic on college students in China. *Psychiatry Research*, 287, 112934. <https://doi.org/10.1016/j.psychres.2020.112934>

- Chao, M., Chen, X., Liu, T., Yang, H., & Hall, B. J. (2020). Psychological distress and state boredom during the covid-19 outbreak in China: the role of meaning in life and media use. *European Journal of Psychotraumatology*, 11(1), 1769379. <https://doi.org/10.1080/20008198.2020.1769379>
- Copeland, W. E., McGinnis, E., Bai, Y., Adams, Z., Nardone, H., Devadanam, V., Rettew, J., & Hudziak, J. J. (2021). Impact of covid-19 Pandemic on College Student Mental Health and Wellness. *Journal of the American Academy of Child and Adolescent Psychiatry*, 60(1), 134–141. <https://doi.org/10.1016/j.jaac.2020.08.466>
- Debbarma, I., & Durai, T. (2021). Educational disruption: Impact of covid-19 on students from the Northeast states of India. *Children and Youth Services Review*, 120(January), 105769. <https://doi.org/10.1016/j.childyouth.2020.105769>
- Eisenberg, D., Golberstein, E., & Hunt, J. B. (2009). Mental Health and Academic Success in College. *B.E. Journal of Economic Analysis and Policy*, 9(1), 1–37. <http://www.bepress.com/bejeap/vol9/iss1/art40>
- Fu, W., Yan, S., Zong, Q., Anderson-Luxford, D., Song, X., Lv, Z., & Lv, C. (2021). Mental health of college students during the covid-19 epidemic in China. *Journal of Affective Disorders*, 280, 7–10. <https://doi.org/10.1016/j.jad.2020.11.032>
- Jones, R. (2017). The student experience of undergraduate students: towards a conceptual framework. *Journal of Further and Higher Education*, 42(8), 1040–1054. <https://doi.org/10.1080/0309877X.2017.1349882>
- Li, H. Y., Cao, H., Leung, D. Y. P., & Mak, Y. W. (2021). The Psychological Impacts of a covid-19 Outbreak on College Students in China: A Longitudinal Study. *International Journal of Environmental Research and Public Health*, 17(11), 3933. <https://doi.org/10.3390/ijerph17113933>
- Lohman, B. J., Kaura, S. A., & Newman, B. M. (2007). Matched or Mismatched Environment? The Relationship of Family and School Differentiation to Adolescents' Psychosocial Adjustment. *Youth and Society*, 39(1), 3–32. <https://doi.org/10.1177/0044118X06296637>
- Lovibond, P. F., & Lovibond, S. H. (1996). The structure of negative emotional states: Comparison of the depression anxiety stress scales (DASS) with the Beck depression and anxiety inventories. *Behaviour Research and Therapy*, 33(3), 335–343. [https://doi.org/10.1016/0005-7967\(94\)00075-U](https://doi.org/10.1016/0005-7967(94)00075-U)
- Mendoza, P., Malcolm, Z., & Parish, N. (2015). The Ecology of Student Retention: Undergraduate Students and The Great Recession. *Journal of College Student Retention: Research, Theory & Practice*, 16(4), 461–485. <https://doi.org/10.2190/CS.16.4.a>
- Navarro-Roldán, C. (2022). Modelo ecológico para la detección temprana del riesgo de deserción en estudiantes universitarios. In C. Navarro-Roldán & P. Reyes (Eds.), *Deserción Universitaria* (pp. 149–194). Universidad de Boyacá.
- Navarro-Roldán, C. P., & Zamudio, L. E. (2021). Cuestionario de riesgo de deserción universitaria (CDUe) basado en el modelo ecológico. *Tesis Psicológica*, 16(1), 1–28. <https://doi.org/10.37511/tesis.v16n1a12>
- Nikčević, A. V., & Spada, M. M. (2020). The covid-19 anxiety syndrome scale: Development and psychometric properties. *Psychiatry Research Journal*, 292, 113322. <https://doi.org/10.1016/j.psychres.2020.113322>
- Pandita, S., Govind, H., & Chib, S. (2020). Psychological impact of covid-19 crises on students through the lens of Stimulus-Organism-Response (SOR) model. *Children and Youth Services Review*, 120, 105783 Contents. <https://doi.org/10.1016/j.childyouth.2020.105783>
- Pérez, C. A. (2020). *Asociación Colombiana de Universidades presenta resultados de la encuesta "Los estudiantes tienen la palabra."* Universidad Del Cauca. <https://>



[www.unicauca.edu.co/versionP/noticias/investigación/investigadores-de-unicauca-y-productores-de-fresa-impulsan-el-desarrollo-de-cadenas-productivas](http://www.unicauca.edu.co/versionP/noticias/investigación/investigadores-de-unicauca-y-productores-de-fresa-impulsan-el-desarrollo-de-cadenas-productivas)

- Ruiz, F. J., Martín, M. B. G., Falcón, J. C. S., & González, P. O. (2017). The hierarchical factor structure of the spanish version of depression anxiety and stress scale-21. *International Journal of Psychology and Psychological Therapy*, 17(1), 97–105. <https://www.redalyc.org/pdf/560/56049624007.pdf>
- Sánchez-Teruel, D., Robles-Bello, M. A., & Valencia-Naranjo, N. (2021). Do psychological strengths protect college students confined by covid-19 to emotional distress? The role of gender. *Personality and Individual Differences*, 171, 110507 Contents. <https://doi.org/10.1016/j.paid.2020.110507>
- Son, C., Hegde, S., Smith, A., Wang, X., & Sasangohar, F. (2020). Effects of covid-19 on college students' mental health in the United States: Interview survey study. *Journal of Medical Internet Research*, 22(9), 1–14. <https://doi.org/10.2196/21279>
- Soraci, P., Ferrari, A., Abbiati, F. A., Fante, E. Del, Pace, R. De, Urso, A., & Griffiths, M. D. (2020). Validation and Psychometric Evaluation of the Italian Version of the Fear of covid-19 Scale. *International Journal of Mental Health and Addiction*, 1–10.
- Tinto, V. (1989). Definir la deserción: una cuestión de perspectiva. *Revista de Educación Superior*, 71(18), 1–9. [http://publicaciones.anui.es.mx/pdfs/revista/Revista71\\_S1A3ES.pdf](http://publicaciones.anui.es.mx/pdfs/revista/Revista71_S1A3ES.pdf)
- Vincentini, I. C. (2020). La educación superior en tiempos de covid-19. Aportes de la Segunda Reunión del Diálogo Virtual con Rectores de Universidades Líderes de América Latina. In *Banco Interamericano de Desarrollo (BID)*. <https://publications.iadb.org/publications/spanish/document/La-educacion-superior-en-tiempos-de-covid-19-Aportes-de-la-Segunda-Reunion-del-Diálogo-Virtual-con-Rectores-de-Universidades-Lideres-de-America-Latina.pdf>
- Wang, X., Hegde, S., Son, C., Keller, B., Smith, A., & Sasangohar, F. (2020). Investigating mental health of US college students during the covid-19 pandemic: Cross-sectional survey study. *Journal of Medical Internet Research*, 22(9), e22817. <https://doi.org/10.2196/22817>
- Wild, S., & Heuling, L. S. (2020). Student dropout and retention: An event history analysis among students in cooperative higher education. *International Journal of Educational Research*, 104, 101687. <https://doi.org/10.1016/j.ijer.2020.101687>

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