THE ROLE OF CONTEXTUAL, DISPOSITIONAL, AND AFFECTIVE VARIABLES ON DROPOUT INTENTIONS OF PHD STUDENTS IN FRANCE

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ABSTRACT

Aim/Purpose	With respect to doctoral students, the present study examined the association between dropout intentions and contextual, dispositional, and affective variables. The aim was to provide a deeper understanding of the factors that promote successful completion of doctoral studies in the humanities and social sciences in France.
Background	Key variables relevant to doctoral life that could serve as predictors for dropout intention were assessed. These were research activity, health and private life, academic social life, supervision, university and facilities settings, career prospects, doctoral year, student personality, self-efficacy, and anxiety and depression levels.
Methodology	Each of the aforementioned variables was measured at the end of the 2019-2020 academic year within a sample of 202 students from the same university who were enrolled in doctoral programs in the humanities and social sciences. Dropout intention was modeled with a logistic regression model, which allowed for the simultaneous taking into account a gamut of variables.
Contribution	This study is the first to jointly assess the variables respective to predicting dropout intention and innovatively account for personality factors in addition to

	contextual factors. This study offers a deeper understanding of the role that personality may play and altogether reveals the variables that are most associated with doctoral dropout intentions in France.
Findings	Through having also modeled personality as a potential risk/protective factor, this study confirms that contextual factors, compared to personality, play a more consequent role in PhD dropout intentions. Furthermore, we show that while personality factors are indeed associated with dropout intention, their links may be best understood through their interplay with contextual factors. Importantly, a sense of self-efficacy, anxiety, and depression was found significant, as well as research wellness, supervision quality, health, and emotional stability. Overall, dropout intentions were found to increase with the doctoral year.
Recommendations for Practitioners	Findings suggest that university personnel aiming to reduce the number of doctoral students who plan to dropout should especially consider the following key variables: research conditions, doctoral year, and student characteristics (e.g., personality, depression, and sense of self-efficacy).
Recommendations for Researchers	In order to better understand doctoral dropout, future studies should consider the interplay between choice of doctoral discipline and contextual, dispositional, and affective variables, as well as theories of motivation.
Impact on Society	In higher education and research, decreasing doctoral dropout is important in maintaining society's confidence in, and general success of, scientific research and educational practice, as well as increasing the amount of public and private funds dedicated to these valuable endeavors.
Future Research	Future research should more intricately assess and control for interactions between individual-level, personality, and contextual factors during the doctorate, as well as include a larger cohort that may consist of both social sciences and traditional sciences majors.
Keywords	doctoral students, dropout intention, personality, well-being, context

INTRODUCTION

Why do some doctoral students consider leaving their studies despite having invested several years already? From both well-being and financial perspectives, doctoral program dropout is a crucial problem that has yet to be understood comprehensively and in a data-driven manner. The doctoral dropout problem is observed on an international scale, with rates reaching as high as 30-50%, depending on country or discipline (Gardner, 2009; Jiranek, 2010). Studies on the topic can be found in different countries such as Australia (Jiranek, 2010), Canada (Litalien & Guay, 2015), Finland and Denmark (Cornér et al., 2021), Germany (Jaksztat et al., 2021), Italy (Geven et al., 2018), the USA (Hardré et al., 2019), Kenya (Matheka et al., 2020), Belgium (Groenvynck et al., 2013), the Netherlands (van Rooij et al., 2021), and Estonia (Vassil & Solvak, 2012). Although certain aspects of the doctoral experience may vary by country, the comparability of dropout rates across countries suggests that some underlying characteristics may be shared nonetheless, which lead to similar outcomes. For example, independent of country, doctoral students evidently share the same pressure of producing publishable research work within a limited time. This pressure, or stress, is fueled by quickly evolving disciplinary norms and expectations imposed via the international scene and publishing journals.

The present study enriches the current literature available on doctoral dropout intention and, to our knowledge, is the first formal study examining a French cohort. The study aimed to answer the following research question: What are the most influential predictors of doctoral student dropout intentions in France?

LITERATURE REVIEW

DOCTORAL STUDENT DROPOUT IN FRANCE

In France, doctoral studies are generally defined by a three-year term and require having already completed a two-year master's degree program. Several studies have explored the experience of doctoral students in France (Haag et al., 2018; Marais et al., 2018), though none has empirically investigated the dropout problem yet. Moreover, in France, no official report thus far has specified the exact number of doctoral students that drop out yearly (Kallenbach et al., 2020; Thibault, 2019). However, Kallenbach et al. (2020), using the data from the French Ministry of Higher Education, Research and Innovation (2015, 2016, 2017, 2018; see also Marlat & Perraud-Ussel, 2022; Ndao, 2019, 2020, 2021), report a useful estimation of doctoral dropout calculated yearly since 2009, through the proportion of theses not defended in their planned year (see Figure 1). These estimations, which can indeed be interpreted as delayed completion rather than only dropout, turn out to be quite similar to dropout rates reported in other countries (as cited in previous sections). Overall, these works point out that doctoral delays and completion issues have been a problem in France since at least 2009 when such data started being available.

Circling back to Figure 1, remarkably, delayed completion/dropout rates are four times higher in the humanities and social sciences (36.45%) compared to the "hard" sciences (8.59% life sciences, 8.33% non-life sciences). This disparity may be explained by inequalities in doctoral funding between the fields. Specifically, Thibault (2019) points out that 82-97% of these are publicly or privately funded in the "hard sciences," whereas only 40% are in the humanities and social sciences. Figure 1 shows that, while delayed/incompletion rates have evolved over the years, the striking disparity between the humanities and social sciences and "hard sciences" has remained stable.
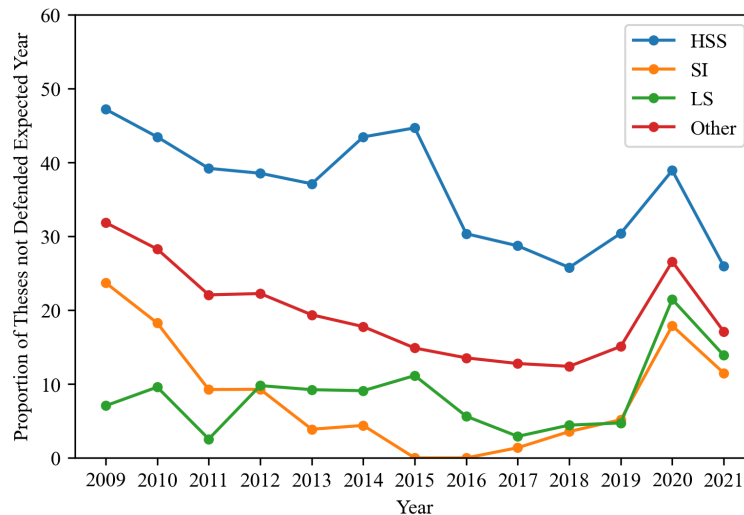
Figure 1. Proportion of theses not defended in their planned year, by discipline, and year

Note: HSS = Humanities and Social Sciences, SI = Sciences and their Interactions, L.S. = Life Sciences, Other = Other Disciplines. These data were obtained from the French Research and Higher Education Evaluation Agency (acronym in French, RERS).

The PhD dropout phenomenon is consequential at both individual and societal levels. For example, students who decide to leave their PhD program incur forgoing multiple years invested in their studies. In this way, additional stress may result from having to contemplate a new career domain or pursue other training, especially in cultures such as France, where the education-career link is much less flexible than in the U.S. Furthermore, in France, universities and research activity are generally financed by public funds; hence, thesis work equates to a sizable public investment at risk. On a larger scale, if noncompletion rates remain too high, public trust in research and graduate education could diminish, in turn jeopardizing the amount of government funds allocated to universities (Jiranek, 2010). On a national level, less research funding also equates to a decelerated rate of scientific knowledge production or innovation, which can be crucial economic levers for a country (Jaksztat et al., 2021). Finally, PhD dropouts can significantly disrupt grant-funded research projects they are a part of. This can be further disruptive when the financial support is from the private sector, where delay or discontinuity may lead to reduced trust, possibly damaging the university's image and decreasing future opportunities to obtain research grants.

Previous literature has identified that measuring dropout itself across universities is incomplete (Tinto, 2012). It may require that universities share a standardized method of assessing and communicating the number of doctoral students who really dropped out. These measurement differences across universities have been especially noted in France. For example, some universities only report dropouts based on students who have explicitly declared their discontinuation of the program, while others may include students leaving one PhD for another one in a different discipline as dropping out (Thibault, 2019). One way to address this issue is to measure dropout *intentions* in the student population, which, in tandem, may also offer some insights into student motivation and wellness.

DROPOUT INTENTION

Intention, in general, has been defined as an individual's motivation to act (Sheeran, 2002). Engaging in a PhD program is a deliberate intention to commit to the doctoral program until obtaining the diploma, despite the frustrations that can come along the way (Alisic & Wiese, 2022). Intention and behavior are positively and significantly correlated, according to a meta-analysis by Sheeran (2002). We clarify that herein, the point of studying dropout intention was not to directly predict the actual dropout behavior but to detect a shift in the doctoral students' motivation, which can reveal their negative experience of the program. In turn, disentangling the roots of this negative experience can be the start of institutional changes that can decrease actual dropout rates.

PhD dropout intention is in fact a fairly studied research subject (Bramlage et al., 2021; Cornér et al., 2021; De Clercq et al., 2019; Gonzalez-Betancor & Dorta-Gonzalez, 2020; Hardré et al., 2019; Hunter & Devine, 2016; Kis et al., 2022; Tommasi et al., 2022; van Rooij et al., 2021; Zhang et al., 2022), and some of these studies are notably rooted in theories of motivation (Alisic & Wiese, 2022; Litalien & Guay, 2015). A recent literature review explored how student experiences during their doctorate can be markedly too negative or daunting in different ways, causing students to decide to leave their research work (Giudicelli et al., 2022). The authors indicated that contextual, dispositional, and affective variables weigh strongly in student experience (Schmidt & Hansson, 2018; Sverdlick et al., 2018). Therefore, we propose that these variables should likewise have an influence on doctoral student dropout intentions.

CONTEXTUAL VARIABLES

After conducting a qualitative study on doctoral student experiences in England, Juniper et al. (2012) identified seven doctoral program aspects that are important to consider: research work, the university, the facilities, career prospects, social aspects, PhD supervision, and the student's health and private life. Because poor conditions in any of these seven aspects may be linked to decreased well-being, several studies aimed to measure these factors using surveys (Casey et al., 2022; Hargreaves et al., 2017), including one in France (Marais et al., 2018). So far, each of these seven aspects has been linked to dropout or dropout intention. For example, concerning the "research

work" domain, students are more willing to leave their doctorate when they feel stuck in their work, have disappointing results, or do not know where their research is headed (Devos et al., 2017).

Golde (2005) examined the "university and facilities" domain, pointing out that program characteristics, organizational structure, and/or disciplinary protocol are linked to student attrition. Work organization has also been linked to dropout intention when task demands are considered illegitimate by doctoral students (Bramlage et al., 2021). Moreover, focusing on the facilities aspect, lack of adequate workspace quality and amenities was indeed found to be linked to higher student departure (Bramlage et al., 2021; Gardner, 2009; Golde, 2005; Matheka et al., 2020; Wright & Cochrane, 2010).

Worries about "career prospects" were also found to impact dropout decisions (Golde, 2005). Moreover, Cornér et al. (2018) and Castelló et al. (2017) found that students who consider leaving their doctoral program feel less encouraged by and less connected to their research environment than students who persist, which emphasizes the importance of the social and the "supervisory" aspects of the doctorate. Finally, in the "health and private lives" of PhD students, lack of funding, as well as emotional distress, anxiety, burnout, and depression, are factors that increase dropout intentions (Castelló et al., 2017; Devos et al., 2017; Park et al., 2021).

Dropout intention also varies according to the year of advancement toward the doctoral degree (Gonzalez-Betancor & Dorta-Gonzalez, 2020; Sverdlick & Hall, 2020). Generally, at the beginning of the doctorate, the student's stress level is at its lowest and well-being at its highest, and these variables progressively invert throughout the doctorate, especially through the most challenging phases of the program, such as during dissertation preparation (Sverdlick & Hall, 2020). Students delayed by two years in their thesis defense are significantly less likely to obtain their diploma (Matheka et al., 2020). In France, a survey studied the evolution of doctoral students' stress through the years of progression (Gerard & Nagels, 2017); questionnaires sent on social networks were answered by 357 students in the humanities and social sciences, law and economics, medicine, pharmacology, and computer sciences. Results indicated that the student's stress levels increased every year for the first three years and then decreased from the fourth year onwards. Even more concerning, about half of the sample (49.2%) declared that they suffered from a high level of stress. These works corroborate that doctoral year and research advancement are important variables to consider for understanding dropout intentions.

Moreover, since the start of 2020, the coronavirus (COVID-19) pandemic undeniably added a new dimension of complexity to the doctoral experience. This health crisis caused lockdowns and closures of many universities and academic laboratories, creating an unprecedented situation that impacted countless doctoral students. For example, one study linked lockdown conditions to increasing rates of depressive symptoms like "loneliness" and "feeling blue" (Evans et al., 2021). Furthermore, a survey study sent to doctoral students in six countries (Cahusac de Caux, 2021) found that 49% of respondents reported that the pandemic had caused a delay in their thesis submission deadline, two-thirds reported that it had negatively impacted their writing output, and 60-65% reported that their thesis writing strategies had been negatively affected. Moreover, around 50% of the students perceived a decrease in their commitment to writing during the pandemic. In parallel, another study corroborated the finding that students perceived a negative impact of the pandemic on their thesis progress and their belief that the health crisis would negatively impact their academic careers (Covington & Jordan, 2022). These studies support the idea that multiple factors may lead to dropout intention, where lockdown and related consequences are likely to aggravate the situation. While not considered a primary variable of interest herein, the potential impact that the COVID-19 lockdown could have had on students' work and mood was considered in tandem with the other variables to mitigate its potential influence as a confounding variable.

While the aforementioned studies sought to identify the magnitude of the dropout problem, a holistic understanding of the problem, or a more integrative model that considers more variables, is still needed. For example, previously, contextual factors have been predominantly studied, though as they

are subject to situational determinants, they are difficult to appropriately generalize from one doctoral situation to another. Thus, variables whose impact can be generalized for several doctoral populations and situations may be highly worthwhile to consider. For example, dispositional variables, such as personality traits, could explain individual reactions to doctoral experiences and their impact on analyses, which can be generalized across disciplines or settings.

DISPOSITIONAL VARIABLES

Personality traits have been regularly associated with a decrease in well-being levels and an increase in attrition levels for both educational and organizational settings (Joshanloo et al., 2012; Lewis & Cardwell, 2020; Okun & Finch, 1998). The Big Five personality model is currently a particularly popular model of personality in psychology (Thompson, 2008). This model describes personality structure in five dimensions: conscientiousness, openness to experiences, agreeability, emotional stability, and extraversion, each along a continuum. The poles of each continuum reflect the presence of the trait versus its counterpart.

Personality, in doctoral settings and attrition, has generally not been evaluated in prior studies of doctoral dropout; only one study connected personality with other variables such as subjective well-being, emotions, life satisfaction, and a series of 11 dimensions that evaluate several aspects of the doctoral experience (Pychyl & Little, 1998). The study included 200 Canadian students in the arts and social sciences. The results showed that a higher score on neuroticism was positively correlated with the doctoral dimensions that were associated with negative affect. Concerning the link between personality and dropout rates, a study on non-doctoral college students (Okun & Finch, 1998) revealed that individuals with low scores on the conscientiousness trait were more likely to drop out of college than those with low scores on the other personality traits.

Another dispositional variable is self-efficacy, defined as an individual's belief about their own capacities to reach a goal (Alisic & Wiese, 2022). In a survey study sent to Canadian doctoral students, Alisic and Wiese (2022) reported that the more doctoral students found themselves qualified in their research competencies, the more they intended to finish their thesis work. Similar results were found in a study revealing that Canadian doctoral students' lower self-efficacy was a predictor of dropout intention (Litalien & Guay, 2015).

AFFECTIVE VARIABLES

Finally, the current study also assessed two affective variables that are regularly studied in doctoral education research: anxiety and depression. For example, in one survey conducted on 5,700 international doctoral students, Woolston (2017) revealed that a large proportion of them seek help for their anxiety provoked by their research. Moreover, a meta-analysis of 32 articles published between 1979 and 2019 (Satinsky et al., 2021), and comprising approximately 29,926 international doctoral students, indicated that 24% of the sample suffer from depression symptoms and 17% from anxiety symptoms. These numbers are particularly worrisome as the prevalence of anxiety and depression symptoms in the general population are around 7% and 5%, respectively (see Satinsky et al., 2021). Anxiety and depression are also significantly linked with dropout and dropout intention. Notably, in a study conducted on 204 doctoral students in the humanities and social sciences in Italy, Tommasi et al. (2022) demonstrated that one-third of their sample suffered from depression and anxiety symptoms. They also showed that a lack of perceived meaning in the research work and not belonging to a support team were associated with depression and anxiety symptoms, as well as dropout intention.

RESEARCH AIMS AND HYPOTHESES

The aim of the present study was to determine which factors are substantially linked to and/or predict the dropout intentions of doctoral students. Due to a lack of such analyses in a French context, contextual, dispositional, and affective factors were examined to study dropout intention in doctoral students within the humanities and social sciences domains. These domains are known to have high

attrition rates. In accordance with the scientific literature presented above, the following assumptions were made.

Concerning the contextual variables:

Hypothesis 1: (a) doctoral year progression would be positively associated with dropout intention, and (b) the rate of dropout intention would be significantly different between the rate of the first year and the years exceeding the standard number of doctoral years allotted to finish the program (i.e., every year after the third year).

Hypothesis 2: A majority of the seven areas of doctoral well-being (identified by Juniper et al., 2012) would be positively associated with dropout intention. These seven areas comprise research work, the university, the facilities, career prospects, social factors, supervision, and student health.

Hypothesis 3: Negative lockdown impact would also be associated with dropout intention.

Concerning the dispositional variables:

Hypothesis 4: Each of the five dimensions of the personality (conscientiousness, extroversion, emotional stability, openness to experience, and agreeability) would be negatively associated with dropout intention.

Hypothesis 5: Self-efficacy would be negatively associated with dropout intention.

Concerning the affective variables:

Hypothesis 6: Anxiety and depression would both be positively associated with dropout intention.

We investigated how contextual, dispositional, and affective variables interacted and related to each other to explain the dropout intention.

METHODS

These research hypotheses were assessed via a cross-sectional study approach including over sixteen variables that may be linked to doctoral dropout and measured on a sizable participant sample. These variables were organized into three categories: (i) contextual variables, measuring various dimensions of the student's academic experience (i.e., conditions respective to their research, supervision, facilities, university, health, social life, career prospects, and doctoral year); (ii) dispositional variables, measuring the student's personal attributes that distinguish them from one another (i.e., conscientiousness, agreeability, emotional stability, openness to experience, extraversion, and self-efficacy); and (iii) affective variables, measuring the student's emotional experiences (i.e., depression and anxiety).

PARTICIPANTS

The sample consisted of doctoral students from the University of Montpellier 3 in France. The doctoral disciplines of the students included languages, literature, art, musical education, history and geography, documentation, economics, social and medical technical sciences, philosophy, and the humanities and social sciences (e.g., psychology, anthropology). However, to preserve the participants' anonymity as much as possible, they were not asked about their specific research field above. A link leading to the questionnaire was sent to the entire student base by email, of which 50 students had not activated their email addresses. In total, 696 invitations were sent.

In total, 269 (38.6%) students responded to the questionnaire. The analyses herein are based on the results of 202 participants (29.0%): that is, out of the 269 participants who submitted the questionnaire, 67 were removed prior to the analyses for not having fully completed the questionnaire. Of the 202 participants, 75 benefited from a full grant to fund their thesis. Finally, the participation rate

herein (29.0%) turned out to be higher than a previous French study (16%) on doctoral experience (Marais et al., 2018) and is furthermore quite comparable to similar studies based in other countries: 29.7% for De Clercq et al. (2019), 19.4% and 25.4% for Frick and Pyhalto (2020), and 38.4% for Stubb et al. (2011).

PRINCIPAL MEASURES

The Ten-Item Personality Inventory (TIPI; Gosling et al., 2003) is a brief questionnaire aimed at measuring the canonical Big Five personality dimensions: conscientiousness, openness to experience, agreeability, emotional stability, and extraversion (Costa & McCrae, 2010). The French adaptation of the scale was used herein (Storme et al., 2016). For each item, the respondents had to answer, on a scale between 1 and 7, how well the presented adjectives corresponded to their own personality: 1 corresponding to "strongly disagree" and 7 corresponding to "strongly agree." Considering the length of the survey, the TIPI was chosen because of its short length. Because each subscale of the TIPI only contains two items, Cronbach's alpha is not considered a suitable measure for internal reliability (see Brito-Costa et al., 2015), and rather, the Spearman-Brown Predicted Reliability formula is recommended (Gosling et al., 2003), especially for two-item scales (Eisinga et al., 2013). Using this statistic with our sample, reliability was found to be low-to-moderate for the five domains: openness ($r = .21$), agreeability ($r = .29$), conscientiousness ($r = .51$), emotional stability ($r = .51$), and extraversion ($r = .54$).

The Hospital Anxiety and Depression Scale (HADS; Bjelland et al., 2002). In this scale, seven items measure the degree of anxiety, and seven other items for depression. Each item is an affirmation that the respondent must agree with or not on a scale of 1 to 4. The HADS was included because of its moderate length, the possibility to obtain two different scores (one for the anxiety subscale and the other for the depression subscale), and because a few French translations have been validated (Maatoug & Gorwood, 2019), especially in an academic setting (Andrews et al., 2006). The observed Cronbach's alpha values on our sample were $\alpha = .78$ for the anxiety scale and $\alpha = .73$ for the depression subscale.

The Juniper PhD Well-being Scale (JPWBS; Juniper et al., 2012) is comprised of seven doctoral facets, which in accordance with Marais et al. (2018), can be described as follows. (1) The *research* domain: the degree to which the student's research work impacts their well-being (Cronbach's $\alpha = .85$ herein calculated). (2) The *career prospects* domain: the degree to which professional training and prospects weigh in the student's well-being ($\alpha = .79$). (3) The *health and private life* domain: the degree to which the student's doctoral responsibilities impact their private life and health and therefore well-being ($\alpha = 0.87$). (4) The *supervisory* domain: the degree to which the thesis director's supervision impacts the student's well-being ($\alpha = .91$). (5) The *social* domain: the degree to which the student's social life in the academic setting can impact their well-being ($\alpha = .89$). (6) The *facilities* domain: the degree to which the lack of facilities at the disposal of the student impacts their well-being ($\alpha = .73$). And finally, (7) the *university* domain: the degree to which the university's characteristics impact the student's well-being ($\alpha = .79$).

High scores in any domain above signify a negative impact on the student's well-being. The original 75 items were translated and tested on a French population of 136 doctoral students at the University of Lyon (Marais et al., 2018). Of them, 57 items were validated with the impact analysis approach proposed by Juniper et al. (2012), which were the same items the present study retained. For each item, participants were asked to rate on a scale of 0 to 5 whether they had ever experienced the situation presented and the extent to which this situation had a significant negative impact on their well-being, with 1 corresponding to "experienced, but not important" and 5 corresponding to "experienced, very important." If respondents had never experienced the situation presented, they were asked to check 0 for "Not experienced." The JPWBS was included because it has been already tested on a French population (Marais et al., 2018) and because the items measured many aspects of the PhD experience.

The Quality in PhD Processes Questionnaire (QPPQ; Herrmann & Wichmann-Hansen, 2017). Seven items measure the confidence that the doctoral student has in his/her own research competencies. The respondents are to answer every item on a scale from 1 (not confident at all) to 5 (very confident) or note when an item is not relevant to their own situation (don't know/not relevant). This scale is advantageous because it measures self-efficacy specifically concerning the research competencies that the students are supposed to acquire during their doctoral program. A Cronbach's α = .83 was herein computed for this scale.

Impact of the COVID-19 Lockdown on Mood and Thesis Work. Two items were used to measure the valence and degree of impact that lockdown had on mood and thesis work respectively. These were:

1) "What is the overall impact that the lockdown has had on your mood thus far?"
2) "What is the overall impact that the lockdown has had on your thesis work thus far?"

These two questions were asked on a Likert scale from 1 (very negative) to 5 (very positive).

Doctoral year, or year of progression, was measured in the personal and socio-demographic information portion of the survey, specifically through the item: "In which year of the doctorate are you enrolled in for the academic year 2019-2020?" through a free ordinal response.

Dropout Intention was measured with a single item, "Did you intend to abandon your thesis during this academic year?" to which the participants had the choice to respond with "yes" or "no." Using one binary item offers several advantages. First, replication and coherence with previous important studies that chose this same measure (Cornér et al., 2021; Gonzalez-Betancor & Dorta-Gonzalez, 2020; Stubb et al., 2011, 2012); and secondly, brevity in the interest of an already lengthy questionnaire. Finally, a binary response allowed for performing a logistic regression modeling of this variable, using the other variables as potential predictors.

As per Marais et al. (2018), Table 1 provides a synopsis table of these questionnaires and items.

Table 1. The scales that comprise the entire questionnaire of the study

Measure	Questionnaire	Validated French translation	No. of items	Likert scale
Personality	Ten-item personality inventory TIPI (TIPI; Gosling et al., 2003)	Storme et al. (2016)	10	1-7
Anxiety and Depression	Hospital anxiety and depression scale (HADS; Zigmond & Snaith, 1983)	Maatoug and Gorwood (2019)	14	1-4
Domains of PhD Student Well-being	Juniper PhD Well-being scale JPWBS (JPWBS; Juniper et al., 2012)	Marais et al. (2018)	57	0-5
Self-efficacy	Quality in PhD Processes Questionnaire (QPPQ; Herrmann & Wichmann-Hansen, 2017)	-	7	0-5
Lockdown Impact during COVID-19 pandemic	-	Giudicelli (2023)	2	1-5
Dropout Intention	Stubb et al. (2011)	Giudicelli (2023)	1	Yes or No
Sociodemographic Variables	Doctoral year; Age; Gender; Nationality; Marital status; Thesis grant and financial situation; Supervision details	Giudicelli (2023)	19	-
Total number of items			110	

PROCEDURE

The study was sent online to the university email address of doctoral students belonging to either of two graduate schools of the University of Montpellier 3, as well as to the personal email address that they provided to their doctoral school. The survey was distributed in collaboration with the University's Student Life Observatory, an administrative department whose objective is to conduct studies on student wellness. This service also appropriately ensured the anonymity of each participant and ensured that data storage and protection procedures were in strict compliance with the European Union's General Data Protection Regulation (GDPR) policies. The study was, therefore, registered in compliance with GDPR protocols. For example, the authors had to provide a detailed account of the experimental procedure and the full list of emails to which the study was sent. The authors could only access the anonymous code generated automatically by the survey software used to create and send the study (i.e., Sphinx software). In other words, only the University's Student Life Observatory could associate the anonymity code with the identity and email addresses of the students. The survey was available to students from June 22 to October 16, 2020, with a reminder sent approximately every other week to all the students who had not answered previously, except during the university vacation period. Overall, the survey reminder was sent seven times to the students. One recall sent in September was also aimed at students who started to respond to the survey but did not finish it. We specifically instructed the students to answer the questions based on the 2019-2020 academic year.

The first page of the survey presented the study and its goals, and the themes of the questionnaire. On this page, the different parts of the questionnaire were presented: the doctoral experience, the student's health, general information about the students, and their doctoral research. Students were informed that their participation in the study was especially valuable in initiating improvements in the two participating doctoral schools. Furthermore, it was specified that they were not obliged to answer any question and that participation was optional. The second page consisted of the consent form, on which an affirmative answer was necessary to begin the study.

The average time to complete the questionnaire was 24 minutes (note: the survey software used, *The Sphinx*, does not provide the standard deviation of completion time). Participation was not paid. The students could pause the questionnaire at any time and resume the survey later without having to start over again. Finally, the survey was configured to be able to be answered on any device, such as computers, tablets, and smartphones.

STATISTICAL ANALYSES AND DATA PREPROCESSING

All analyses were performed in Python using the *scipy*, *pingouin*, and *statsmodels* libraries, except for the structural equation modeling which was performed using the powerful *lavaan* package in R. The principal dependent variable of the study, Dropout Intention, is binary, and 18 variables were considered explicative variables, which can be found in the Appendix. For all questionnaires used, Cronbach's alpha for internal consistency was calculated and verified.

First, two-sample Welch *t*-tests were calculated in which the two groups were determined as presence vs. absence of Dropout Intention for all continuous variables, and *p*-values were FDR-corrected for multiple comparisons. Then, following an observation of the mean difference based on doctoral year, a chi-squared adequacy test with six levels (doctoral years) was realized, followed by pairwise post-hoc χ^2 tests between each of the years. These post-hoc tests were corrected for multiple comparisons (15 comparisons possible) based on the correction proposed by Arnholt (2016), where the alpha threshold is divided by the number of possible comparisons. Next, in preparation for satisfying modeling criteria, the explicative variables were normalized using the Yeo-Johnson transformation (Yeo & Johnson, 2000).

A backward stepwise logistic multiple regression model was performed to identify the most pertinent variables that predicted Dropout Intention. First, in the full model with all variables, approximately 4% of the participants were filtered as outliers based on Cook's Distance values (see Pinho et al.,

2015), which exceeded six times the mean value. Then, predictor variables in the model were eliminated recursively by which removal would most improve the Akaike Information Criterion, AIC (Cavanaugh & Neath, 2019). For the resultant model, the necessary assumptions and diagnostics (see Osborne, 2014) were rigorously evaluated, and these are provided in the Results section.

Finally, a mediation or path analysis modeling was performed within the SEM framework to obtain a more integrative and explanatory model. Prior to this analysis, a correlation matrix comprising all the study's variables (normalized) was examined. The p-values of this matrix were FDR-corrected for multiple comparisons.

In the SEM, no latent explicative/composite variables were added to the model. The resultant model was obtained through a data-driven approach based on maximizing the goodness of fit indices. The simplest SEM network structure that appropriately satisfied the standard reference SEM diagnostics was retained. Then, the plausibility of several additional paths was evaluated (e.g., strongest correlations in the correlation matrix, suggested by the standard modification indices provided through the *lavaan* package, or theoretically motivated), and these were retained only if they substantially improved the SEM diagnostics.

RESULTS

The final sample, on which the following analyses are based, consisted of 202 participants from an initial 269 who did not fully complete the questionnaire. This resultant sample was comprised of 67 males aged between 24 and 74 ($M = 37.6$, $SD = 13.1$), 131 females aged between 24 and 75 ($M = 34.9$, $SD = 11.1$), and 4 ($M = 28.5$, $SD = 3.5$) who chose to respond as "other" to the gender identity. Table 2 provides more socio-demographic details of the sample.

Table 2. Socio-demographic information of the participants of the study

Variable	Doctoral School 1	Doctoral School 2	Total sample
Number of Participants	118	84	202
Gender			
Female	76	55	131
Male	38	29	67
Other	4	0	4
Age			
20-29	38	49	87
30-39	40	21	61
40-49	18	5	23
50-59	10	5	15
60-70	6	1	7
70-80	6	3	9
Nationality			
French	82	58	140
International	36	26	62
Marital Status			
Single	45	46	91
Free union	25	18	43

Variable	Doctoral School 1	Doctoral School 2	Total sample
Married	27	12	39
Civil union	11	4	15
Divorced	9	4	13
Other	1	0	1
Children			
Yes	38	16	54
No	80	68	148
Year in the PhD program			
1st year	28	27	55
2nd year	25	26	51
3rd year	25	18	43
4th year	20	10	30
5th year	10	2	12
6th year	10	1	11
Type of Supervision			
One supervisor	78	36	114
Multiple supervisors	34	37	71
Multiple supervisors and universities	6	11	17
Type of Funding			
Funded thesis	33	42	75
Job outside of academia	42	20	62
No funding	38	18	56
Other	5	4	9

Next, the principal dependent variable of the study is Dropout Intention, which was measured by the question, "Do you intend to abandon your thesis during this academic year?" for which 44 (21.8%) responded yes, and 158 (78.2%) responded no.

STATISTICAL TESTS BASED ON DROPOUT INTENTION GROUP

Two-sample Welch t-tests, based on dropout intention, were performed on each variable (18 in total). Then, the p-values were corrected for multiple comparisons. Table 3 provides the results, including only the significant variables. The variables are ordered from strongest to weakest t-values for the positive variables and then likewise for the negative variables. In these t-tests, one can see that the dropout intending group was most significantly different based on having higher variable values for the domains of Research, Health, Supervision, Career, Social, Year, and Depression, in that order; and lower variable values in their perception of the degree to which Lockdown impacted their Work, Self-Efficacy, Lockdown impacted their Mood, the Conscientiousness personality trait, and Emotional Stability, in that order.

Table 3. Two-sample Welch *t*-test significant variables based on dropout intention group

	t	df	*p*	*p*-unc	Cohen's *d*	BF_{10}	1-β Power	M (SD) + Dropout	M (SD) - Dropout
Research	7.21	62.8	<.001	<.001	1.32	6.1e+08	1.00	3.4 (1.0)	2.26 (0.8)
Health	5.42	66.8	<.001	<.001	0.94	7.0e+04	1.00	3.28 (1.0)	2.37 (0.9)
Supervision	3.87	63	.001	<.001	0.71	149.0	.98	2.42 (1.1)	1.71 (1.0)
Career	3.22	64.7	.006	.002	0.57	19.4	.92	2.68 (1.1)	2.08 (1.0)
Social	3.12	60.5	.007	.003	0.59	14.6	.93	2.77 (1.2)	2.18 (1.0)
Year	2.74	67.8	.02	.008	0.47	5.4	.79	3.16 (1.4)	2.49 (1.4)
Depression	2.29	68.1	.04	.02	0.39	2.0	.63	6.68 (3.4)	5.35 (3.4)
Lockdown Work	-4.02	77.8	<.001	<.001	0.63	248.6	.96	1.91 (1.1)	2.67 (1.2)
Self-Efficacy	-3.35	62.4	.005	.001	0.62	28.5	.95	2.64 (1.0)	3.18 (0.9)
Lockdown Mood	-2.65	67.4	.02	.01	0.46	4.3	.76	2.07 (1.2)	2.60 (1.2)
Conscientiousness	-2.3	65.3	.04	.02	0.41	2.0	.66	5.30 (1.2)	5.74 (1.1)
Emotional Stability	-2.21	67.6	.04	.03	0.38	1.7	.60	3.83 (1.5)	4.38 (1.4)

Note: *p*-values corrected for multiple comparisons by the FDR Benjamini-Hochberg correction; *p*-unc = p-value prior to the correction; BF_{10} = Bayes Factor reported as in favor of the alternative hypothesis.

Complementing this analysis, we hypothesized that the doctoral year would be correlated with dropout intention. Figure 2 shows the proportion of students intending to drop out as a function of their doctoral year. Specifically, out of 55 students enrolled in their first year of the doctoral program who responded to the study, 7.4% (*n* = 4) had the intention to stop their doctorate during the academic year. This number increases in the second year with 23.5 % (*n* = 12) out of the 51 students and again in the third year with 32.6% (*n* = 14) out of 43 students before decreasing in the fourth to 20.0% (*n* = 6) out of 30 students.
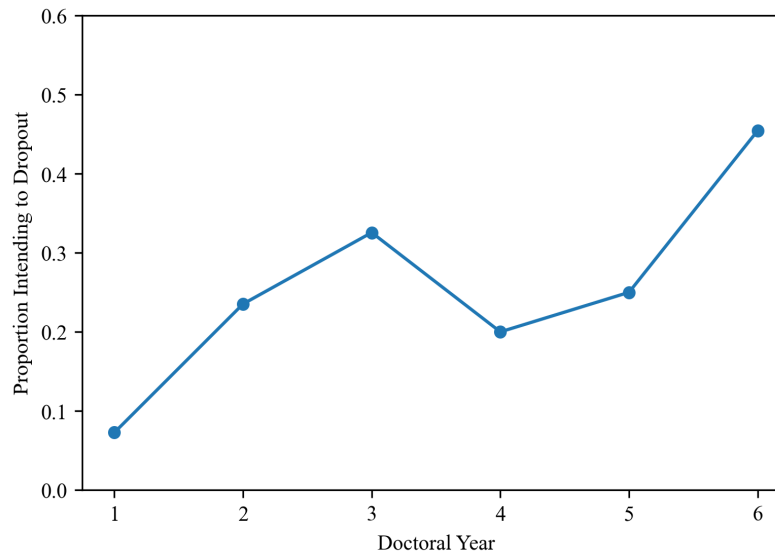
Figure 2. Doctoral student dropout intention rate as a function of their doctoral year

A chi-squared adequacy test confirmed a significant difference of proportions by year χ^2(5, 202) = 18.21, p = .002, which corroborates the previous t-test result on the mean year by-group. Then pair-wise post-hoc χ^2 tests between each of the years revealed a significant difference between the first year versus the third year in the proportion of dropout intentions (p =.03). However, note that for this final pairwise result, Arnholt (2016) recommends a Bonferroni adjustment in which the alpha level is readjusted by dividing by the number of paired comparisons possible. This allows for 15 comparisons between the six years, in which α = .05/15 = .003, where previously calculated p = .03 would not be considered as significant.

IDENTIFYING THE PREDICTORS OF DROPOUT INTENTION

To determine which variables predict dropout intention in a framework that allows for simultaneously taking into account multiple variables, a logistic regression modeling was performed. Specifically, a top-down stepwise approach based on minimizing the model's AIC value was implemented.

The resultant model demonstrated strong measures corroborating its goodness of fit. These are an AUC value of 0.96, a pseudo-R^2 of 0.64 (McFadden), and 0.78 (Nagelkerke), an AIC of 132.79 compared to that of the null model AIC=269.55. The optimal classification threshold was close to neutral, at 0.51, and resulted in a Sensitivity of 0.92, Specificity of 0.88, and Balanced Accuracy of 0.90. A significant equation was found F(17, 175) = 10.05, p < .001 (model deviance compared to an intercept-only model) that appropriately satisfied the standard diagnostics, such as the Likelihood Ratio Test and the Lagrange Multiplier Score Tests for overall model fit ($\chi2(2)$ = 170.8, p < .001 and $\chi2(17)$ = 113.8, p < .001 respectively).

The results in Table 4 demonstrate that the strongest predictors of intention to drop out are in the domains of Research, Health and Private Life, and Supervision, as well as the personality trait of Openness. Then, the strongest predictors of not intending to drop out were the personality traits of Conscientiousness, University problems, and Depression.

Table 4. **Logistic Regression results for the prediction of Dropout Intention**

Variable	β	95% CI	z	p
Research	3.13	[1.88, 4.37]	4.93	<.001
Health	1.14	[0.23, 2.05]	2.47	.01
Openness	0.83	[0.12, 1.54]	2.3	.02
Supervision	0.96	[0.14, 1.78]	2.29	.02
Conscientiousness	-1.22	[-1.96, -0.48]	-3.24	.001
University	-1.37	[-2.26, -0.47]	-2.98	.003
Depression	-1.55	[-2.61, -0.49]	-2.86	.004

Note: The dotted line separates the variables with positive versus negative β coefficients (predicting more vs. less dropout intention). The resultant model was obtained from a stepwise logistic regression aiming to minimize the AIC.

IDENTIFYING MEDIATING TRENDS IN PREDICTING DROPOUT INTENTION

Regression models have some limitations in that they cannot model mediating relationships between variables, and consequently, some intercorrelated variables are inevitably excluded (e.g., in sharing significance); it is more difficult to provide an integrative model tying into different parts of the theory. Structural equation modeling (SEM) can respond to these limitations and go beyond, such as by organizing correlated variables into sharing a (latent) factor structure.

The correlation matrix is presented in the Appendix. All correlations were of Pearson *r*, except for those with Dropout Intent, which were point-biserial due to the binary nature of the latter. As expected by the JWBPS proposed by Juniper et al. (2012), the majority of the seven domains were significantly positively correlated with the presence of Dropout Intent, except for University and Facilities; Doctoral Year and Depression were also positively correlated with Dropout Intent. In terms of negative correlations, Conscientiousness was the only personality trait significantly correlated with Dropout Intent, and Self-Efficacy and Lockdown Impact on Work/Mood were also negatively correlated with Dropout Intent. The seven domains of the JWBPS were strongly and positively intercorrelated between *r* = .3 to .6. Anxiety is strongly negatively correlated with Career Prospects and Emotional Stability. Health was significantly positively correlated (worsening) with Doctoral Year, negatively correlated (protective factor) with Emotional Stability, and positively correlated (worse) with Anxiety and Depression. These observations will corroborate the significant paths found in the SEM modeling in the following section.

First, the validity of the SEM was verified, adhering to the standard goodness of fit indices and their benchmarks. These results are provided in Table 5. The resultant model satisfied all nine indices and thus demonstrated an excellent fit.

Table 5. **Goodness of fit indices for the structural equation model (SEM)**

Indices	Observed value	Acceptable threshold
Model χ^2/df	1.95	< 5.0
CFI[1]	0.97	> 0.90
IFI[2]	0.97	> 0.90
NNFI[3]	0.96	> 0.90
RMSE[4]	0.07	< 0.10
RMSEA *p* Close Fit	0.07	> 0.10
RMSEA 90% Confidence Interval	[0.05; 0.09]	[0.00; Close to RMSEA]
GFI[5]	0.98	> 0.90
AGFI[6]	0.95	> 0.90

Note: [1]Comparative Fit Index; [2]Boellen's Incremental Fit Index; [3]Non-Normed Fit Index (also known as Tucker-Lewis Fit Index); [4]Root Mean Square Error of Approximation; [5]Goodness of Fit Index; [6]Adjusted Goodness of Fit Index

The resultant SEM, as shown in Figure 3, provided the most integrative model of the analyses presented so far, demonstrating the way in which certain variables may interplay or mediate effects on the dependent variables. In this resultant model, three main paths appear to predict dropout, which are Health and Private Life, University setting, and Research. Health appears to be strongly predicted by Depression, Anxiety, and the Openness personality trait. In turn, Emotional Stability and Career Prospects seem strongly associated with Anxiety. Next, the University path appeared strongly associated with the doctoral student's view also on the Social Wellness at the campus. Finally, the Research path was the most predictive, being three times in magnitude (coefficient of 0.21 vs. 0.06 and -0.08). The Research domain (or problems) is negatively associated with good Self-Efficacy and the Conscientiousness personality trait and associated positively with problems in Supervision and Facility problems.
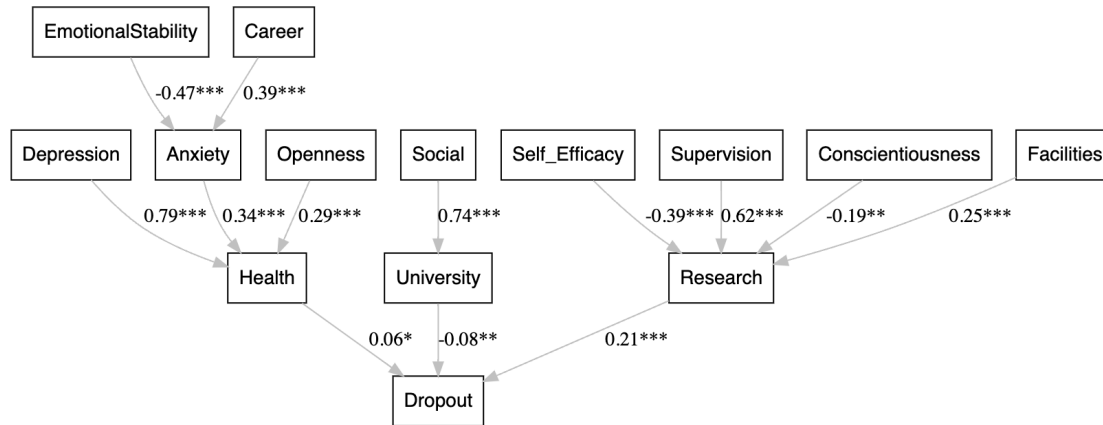
Figure 3. **Structural equation model for the prediction of**
Dropout Intention as a binary variable, standardized coefficients
with significance represented as *** $p \leq 0.001$, ** $p < 0.01$, * $p < 0.05$

The goodness of fit indices is available in Table 4. Three main paths appear to predict dropout, as Health and Private Life, University setting, and Research.

DISCUSSION

The purpose of this study was to examine dropout intentions of doctoral students. To our knowledge, this is one of the first empirical studies to examine doctoral student dropout intentions in France, and with a large sample (i.e., >200 participants). Overall, 21.78% of the respondents stated that they intended to drop out at some point during the academic year. Given that our sample was composed of doctoral students in the humanities and social sciences, a dropout intention rate of 21.78% is consistent with the estimated proportions of theses not defended in the humanities and social sciences that were presented in Figure 1. The disparity here of 21.78% versus 40% can be explained in several ways, including (i) an unwillingness to admit a possible dropout, (ii) biases in who responds to the questionnaire, and (iii) the study was only sent out during one period of the year. Perhaps some students stated that they did not intend to drop out but did so later when the study was no longer in progress.

To achieve an objective of understanding dropout intentions, we assessed dispositional (i.e., personality and self-efficacy), contextual (i.e., research, social life, health and privacy, supervision, facilities, university, career prospects, and year of PhD progression), and affective (i.e., anxiety and depression) variables through a survey sent to students in two doctoral schools spanning the social sciences and humanities disciplines.

THE HYPOTHESES OF THE STUDY AND THE CORRESPONDING RESULTS

Based on the literature reviewed, six hypotheses were formulated. For each of these hypotheses, we present below a summary of the main results.

First, we hypothesized that the intention to drop out would differ between the first year and years beyond the standard duration of a French PhD (i.e., every year after the third). The results indicate partial support for this hypothesis. The specific years beyond the standard length of the PhD program did not show a significant increase in intention to drop out. However, year progression was indeed significantly and positively correlated with intention to drop out as the variable is also significant in the regression model predicting intention to drop out.

Second, we hypothesized that the seven areas likely to decrease doctoral students' well-being (Juniper et al., 2012) would be associated with higher intention to drop out. This hypothesis was generally

confirmed. The results showed that students who wished to drop out had a more negative assessment of their experience regarding their research, social aspect, career prospects, supervision and health, and private life. Research problems were particularly associated with the intention to drop out, being the strongest predictor in both the logistic regression and SEM. In the SEM, research issues are influenced by low levels of self-efficacy and conscientiousness, as well as problems found in the supervision and facilities areas. Health is influenced by the personality dimension of openness to experience and logically by depression and anxiety, moderated by emotional stability and career prospects. Surprisingly, the model reveals a negative relation with the university domain, meaning that students who are less troubled by the university's administrative and political issues are more often considering dropping out. These counterintuitive results might indicate (1) that students who are isolated from the university because they work to support themselves do not suffer from the administrative and political problems of the university but also do not enjoy their doctoral experience, (2) students who are already psychologically disengaged from their doctoral studies do not care about the administrative and political problems of the university.

Third, we hypothesized an association between a negative lockdown impact and dropout intention. This hypothesis was generally confirmed, as the impact on mood and work was indeed negatively associated with the intention to drop out. Doctoral students who intended to drop out had a significantly more negative perception of the impact of confinement on their work and mood, as shown by the results of the Welsh t-tests. Furthermore, in the correlation results, lockdown impact was significantly correlated with higher levels of anxiety and depression, problems in health, and research situations. Finally, while not included in the SEM, based on these correlations, lockdown may be linked to both the health and research domains. Overall, these results are consistent with several works that found that the COVID-19 lockdown negatively impacted the doctoral experience regarding work and research (Cahusac de Caux, 2021; Covington & Jordan, 2022) and mental health (Evans et al., 2021). Moreover, during a one-year longitudinal study conducted in France, Paucsik et al. (2022) discovered that doctoral students' stress, anxiety, and depression levels increased during COVID-19.

Fourth, we hypothesized that each of the five personality dimensions would be associated with the intention to drop out. This hypothesis was also partially confirmed. Specifically, conscientiousness was moderately negatively correlated with the intention to drop out. In addition, Welsh t-test analyses revealed that students who intended to drop out were significantly less conscientious and less emotionally stable than students who did not intend to drop out. In the regression model, openness to experience predicted intention to drop out, while conscientiousness predicted not considering dropping out. In addition, the SEM revealed an influence of openness to experience on health and an influence of emotional stability on health via anxiety.

Fifth, we hypothesized that doctoral students' perceived self-efficacy would be negatively related to their intention to drop out. This hypothesis was confirmed because self-efficacy was significantly negatively correlated with the intention to drop out. In addition, the Welsh t-test showed that students who intend to drop out feel less effective in their research skills than students who do not. In addition, self-efficacy indirectly influenced the intention to drop out through its association with the research domain.

Finally, we hypothesized that anxiety and depression would be positively associated with the intention to drop out. Surprisingly, anxiety did not appear significant in the preliminary analyses. However, it did appear in the SEM, influencing the health domain in terms of its association with Dropout intention. The results concerning depression are particularly remarkable and nuanced. Depression was moderately and positively correlated with the intention to drop out and influenced the health domain in its association with drop out intention. The results also revealed that students who were considering dropping out experienced more depressive symptoms than students who did not. However, depression was also a predictor of intention not to drop out in the logistic regression model. Similar results have been found in the literature (Gonzalez-Betancor & Dorta-Gonzalez,

2020), with the authors suggesting that in some cases, PhD students with depression may be more resilient in the face of obstacles, which could prevent them from dropping out of their studies.

THREE FACETS TO UNDERSTANDING THE RISK OF DOCTORAL DROPOUT INTENTION

Based on our results and current literature, there are three factors that explain doctoral thesis discontinuity: (i) the year of progression, (ii) the research domain, and (iii) the personality dimensions.

THE YEAR OF PROGRESSION

First, dropout intentions vary according to the year of progression, suggesting that doctorate wellness is not a linear experience. The high rate of dropout intention during the third year and after can be attributed to receiving disappointing results or being late in the thesis writing (Devos et al., 2017). In France, usually doctoral study is planned for a 3-year term. Doctoral scholarships or other types of financial support rarely exceed this time limit. Consequently, dropout intentions naturally increase as financial pressures may accumulate each year thereafter. However, continuing the doctorate in the fourth, fifth, or more years is becoming increasingly accepted, where students are allowed to find other ways to fund one or two additional years to finish their thesis. Dropout intentions tend to diminish in the fourth year, perhaps because students are newly resolved and determined to finish their PhD. Gerard and Nagels (2017) established among doctoral students in France that stress levels tend to increase during the first three years of the PhD and drop during the fourth year. The years after that have higher dropout intention rates (although not significant in the post-hoc test), which may perhaps be explained by students questioning their own work and competencies, as well as bearing accumulating financial pressure. Overall, these results confirm that the doctoral experience significantly evolves throughout the progressing years, which is a finding in previous international studies (Corcelles et al., 2019; Gonzalez-Betancor & Dorta-Gonzalez, 2020; Sverdlick & Hall, 2020). Therefore, our study shows that the year of advancement is linked to dropout intention.

RESEARCH DOMAIN

Second, the research subscale of the JPWBS (Juniper et al., 2012) was most strongly associated with doctoral students' dropout intentions. Within this subscale, 86% of participants reported having doubts about their capacity to conduct a research project, and 89% reported feeling demotivated because their research project was not advancing as fast as they had hoped. Negative research experiences could be related to not completing the thesis. A prior study revealed that students who did not adequately progress in their research were the most likely to not complete their thesis (Devos et al., 2017). The students who intended to drop out were also particularly worried about their research work due to the lockdown during the pandemic compared to those who did not. The pandemic had negative consequences on the doctoral students' research work (Cahusac de Caux, 2021; Evans et al., 2021). This study's logistic regression model predicting dropout intention confirmed that research plays an important role in the intent to discontinue the doctoral program. Specifically, out of all the contextual variables, the research subscale proved to be the most influential in the regression model. These results suggest that student judgments about their experience and competencies as young researchers play an important role during the doctoral journey associated with their motivation to continue or not.

PERSONALITY DIMENSIONS

Finally, the results reveal the role that student personality can play in dropout intention. Conscientiousness was significatively and negatively correlated with dropout intention, meaning that the more students had a high score in this dimension, the less likely they declared that they had the intention to quit the doctorate. The study also revealed that students who considered dropping out were less conscientious and emotionally stable than students who did not. The role of personality was clearer in the logistic regression regarding their effect on the dropout intent. While conscientiousness predicted the intention of not dropping out, openness to experience did predict the intent to dropout. The

three personality dimensions were also significant in the SEM, indirectly linked to dropout intention. Emotional stability and openness were associated with dropout intent through the health domain and conscientiousness through the research domain.

Previous studies have defined the opposite of conscientiousness (individuals with a low score on this trait) as disorderly, inefficient, and sloppy in their work (Thompson, 2008). Indeed, another study revealed that a low conscientiousness score was positively related to procrastination and its antecedents, such as task aversiveness, fear of failure, difficulty in decision-making, and dependency (Watson, 2001), and was already found to predict college student attrition (Okun & Finch, 1998). Low emotional stability, also known as a high level of neuroticism, is generally associated with more negative experiences or reactions (Thompson, 2008). Finally, people with levels of openness to experience have been known to appreciate less stability and structural work like academic research work can demand. Studies have revealed the role of conscientiousness, openness to experience, and emotional stability on dropout intention (Deniz Günaydin, 2021; Robert & Vandenberghe, 2017; Sifuna Mayende & Abaasi Musenze, 2014).

LIMITATIONS

A few limitations of this work are to be noted. First, the results cannot be generalized to all doctoral students in the humanities and social sciences, as our sample comes from only two doctoral accreditation programs. The study was conducted in 2020 during COVID-19 and, therefore, took place during a period that may have greatly impacted the doctoral experience for certain students. The use of the short personality scale, TIPI (Gosling et al., 2003), probably led to reduced statistical power. We recommend that authors use longer personality scales for future studies like the BFI-FR (Plaisant et al., 2010), a 45-item scale. However, the TIPI scale has been specifically created to be included in long surveys like this one. This scale was used to avoid overloading the participants with long questionnaires that could make filling out the survey a difficult process.

FUTURE RESEARCH

Doctoral dropout is an understudied area in France. Therefore, this study's findings could be useful for doctoral students, supervisors, and universities. Some recommendations can be made based on this study's results. Research being the principal predictor of dropout intention, supervisors, universities, and doctoral schools can create interventions that can identify and help students to work on their research, especially when they face difficulties in progressing in their work or have lost sight of the ways their research can help society, even when their results seem disappointing. Moreover, although we use personality measures in this survey, we do not encourage universities to select future doctoral students by testing their personalities. Instead, understanding and being vigilant of the student's personality and individual differences can help students during difficult times. This study shows that less conscientious students are more likely to consider not completing their PhD. Therefore, interventions could be developed to help students plan their research, establish a rhythm of work every day, or learn to balance or reconcile their research work with their teaching assignments.

CONCLUSION

Novel findings were obtained in this study, which could enrich theoretical and practical considerations. Contextual, dispositional, and emotional variables were found to be significantly associated with dropout intention, suggesting that not completing one's studies is a multifaceted phenomenon. The research domain was the most powerful predictor in most of the analyses. Although personality is not yet an extensively studied variable in the PhD dropout literature, several personality traits were found significant in our analyses. Finally, this study also quantified several ways that lockdown was significantly associated with doctoral experience or dropout intentions.

Finally, this paper leaves the door open to new research about doctoral students' dropout intentions. Future studies aiming to replicate the results in other disciplines could study the relationships in a nuanced manner or generalize the findings. The use of the JPWBS (Juniper et al., 2012) could be especially important, as it has already been previously used in other French and European samples (see Casey et al., 2022; Hargreaves et al., 2017; Marais et al., 2018). Also, more studies about the association of personality and goal renunciation can better clarify the interplay between personality and contextual factors in dropout intention. Overall, this article contributes to the literature about PhD experience and broadens our understanding of doctoral students' dropout intentions, especially in France.

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APPENDIX
CORRELATION TABLE INCLUDING ALL VARIABLES WITH *P*-VALUES
CORRECTED FOR MULTIPLE COMPARISONS

	Ext	Agr	Con	Emo	Ope	Anx	Dep	Uni	Soc	Res	Hea	Car	Sup	Fac	LMo	LWo	SEf	Yea
Extraversion																		
Agreeableness																		
Conscientiousness		.30***																
Emotional Stability		.28***	.25***															
Openness	.19*	.16*	.17*															
Anxiety		-.18*		-.55***														
Depression	-.19*	-.33***	-.22**	-.30***		.51***												
University				-.23**		.34***	.20**											
Social				-.20*		.29***	.21**	.51***										
Research			-.16*	-.30***		.44***	.44***	.40***	.42***									
Health				-.31***		.47***	.49***	.38***	.39***	.67***								
Career				-.28***		.34***	.28***	.44***	.59***	.60***	.50***							
Supervision						.26***	.29***	.34***	.47***	.52***	.47***	.52***						
Facilities				-.16*		.21**	.22**	.42***	.46***	.38***	.39***	.49***	.37***					
Lockdown Mood						-.25**	-.21**			-.23**	-.19*			-.18*				
Lockdown Work							-.19*			-.23**		-.19*			.61***			
Self-Efficacy		0.22**	.23**	.28***	.19*	-.18*	-.17*		-.19*	-.29***		-.18*						
Year										.17*	.28***						.22**	
Dropout			-.17*				.16*		.22**	.46***	.35***	.23**	.31***		-.20*	-.27***	-.25**	.21**

Note: *** *p* < 0.001, ** *p* < 0.01, * *p* < 0.05 all *p*-values corrected for multiple comparisons by the FDR Benjamini-Hochberg correction. Nonsignificant correlations are not shown. All entries are Pearson *r* correlations, except those in the final row which are point-biserial correlations, as the dropout variable is binary.

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