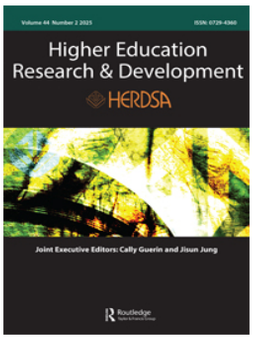

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Intentions versus outcomes in doctoral degree completion

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ABSTRACT

The decline in doctoral program completion has become one of the main challenges in doctoral education worldwide. As concern about this issue grows, the number of studies examining the topic has also increased. Many of these studies, which aim to identify the factors that contribute to high attrition rates, rely on cross-sectional data and often use students' degree completion plans as a proxy for either completion or attrition. This approach raises a crucial question: How well do these proxies correlate with actual graduation outcomes? Utilizing a quasi-longitudinal dataset, our study investigates the relationship between various indicators of student plans, as used in cross-sectional studies, and students' eventual completion or withdrawal from doctoral programs. Our analysis reveals a significant disconnect between student intentions and their actual outcomes, which indicates that students' plans may not always be a reliable predictor of graduation results. The findings suggest that using these proxies can lead to misinterpretations or the omission of key factors that affect outcomes. Such insights are valuable for developing more accurate scales and indicators to measure dropout intentions in cross-sectional studies and contribute to the broader understanding and discussion of doctoral student outcomes and success.

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Doctoral students; attrition; intention-behavior gap; graduation outcomes; student Intentions

Introduction

The decline in doctoral program completion has emerged as a significant challenge in doctoral education worldwide (Skopek et al., 2022; Zhou & Okahana, 2019). This issue, despite varying by country, research field and university (Goenner & Snaith, 2004), holds undeniable importance (Bourke et al., 2004). The growing concern over high attrition rates has led to an increase in studies dedicated to understanding this phenomenon.

The majority of these studies rely on cross-sectional surveys of current doctoral students. Since such surveys do not measure actual graduation outcomes, researchers employ various proxies for completion or retention. These proxies include student plans to earn a degree, intentions to interrupt studies or thoughts of discontinuing their doctoral journey (Stubb et al., 2011; Van Rooij et al., 2021). Student intentions are

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measured using a range of methods – from single questions to complex indices. For instance, some studies ask students about the frequency of their thoughts on dropping out (Stubb et al., 2011), while others assess the seriousness of their intentions to leave academia before finishing their program (Hunter & Devine, 2016; Larcombe et al., 2022).

However, little is known about the relationship between these proxies and actual graduation outcomes. Are these indicators truly reflective of eventual completion or dropout? This is a legitimate concern because the validity of these proxies directly impacts the reliability of the recommendations drawn from the studies.

Intentions as proxies for planned behavior have been widely used in educational research. Previous studies have established a relationship between intentions to drop out and actual dropout rates among school and college students (Mashburn, 2000; Vallerand et al., 1997). However, similar evidence for doctoral students is scarce, except for a study by Litalien and Guay (2015), which found that common factors shape both intentions and actual outcomes among doctoral candidates.

This study aims to bridge this gap. We will examine the correlation between various indicators of student intentions and the actual graduation outcomes of these students. By using a quasi-longitudinal dataset that merges survey responses from doctoral students with administrative records of degree completion, we aim to determine the accuracy of student intention variables as proxies for graduation outcomes. Additionally, we will assess which variables are more predictive than others and whether different factors influence intentions and actual graduation results. We hope to provide insights into doctoral completion measurements and contribute valuable data to the ongoing discourse on doctoral education.

How can completion or dropout be measured?

The range of data that can be used to assess doctoral completion and program retention is broad. The most accurate data is likely to be gathered by non-reactive methods, such as statistical or administrative records on completion and dropout rates, or the 'time-to-degree' period. Completion or dropout rates are typically measured for a certain cohort by examining a group of students who enter a program at the same time and counting the ones who either defend their thesis or withdraw (De Valero, 2001; Goenner & Snaith, 2004). 'Time-to-degree' is usually measured as the median number of years from entering the program to the defence of the thesis (Zhou & Okahana, 2019). These indicators can be used at both the aggregate level, to characterize student groups' and departments' completion, or the dropout level (De Clercq et al., 2021; De Valero, 2001; Zhou & Okahana, 2019), as well as at the individual level to evaluate each student's outcomes (Bourke et al., 2004; Spronken-Smith et al., 2018; Wollast et al., 2018). For both aggregated and individual indicators, statistical or administrative records make it possible to analyse actual graduation outcomes. In the case of regional or national data, these records provide the most extensive data and more opportunities for further generalization. However, these studies have limitations in that they provide little information about potential dropout factors. This limitation can be addressed by enriching statistical data or administrative records with survey data (Bekova, 2021; Price, 2006).

Another way to measure confirmed graduation outcomes at the individual level is through longitudinal studies which track one or more cohorts of doctoral students from

their training until graduation (Glorieux et al., 2024; Skopek et al., 2022; Van der Linden et al., 2018). Despite the benefits, such as measuring actual student outcomes and enabling dynamic analysis, such studies demand a significant number of financial and administrative resources to gather information and have limitations due to participant dropout.

Cross-sectional data remains a primary source of information in dropout studies. The respondents can be current or former doctoral students. Surveys of graduates or individuals who have withdrawn are less widespread (Booth & Satchell, 1995; Litalien & Guay, 2015). These studies usually include former doctoral students from certain cohorts or certain universities (Van Der Haert et al., 2014), have a limited sample size (Grasso et al., 2009; Leonard et al., 2005) and require additional efforts to get a contact list. Additionally, respondents may not accurately recollect their prior experiences, and this group, particularly those who withdrew, is known for having a low response rate (Bekova, 2020a).

Surveys of current doctoral students, as the most readily available group for such inquiries, are the typical method for gathering data on doctoral student experience and outcomes. These surveys are cost-effective and easier to organize than longitudinal studies and allow researchers to collect extensive and timely information about different students' characteristics at a single point in time. However, a key limitation of using cross-sectional data, particularly for investigating completion and dropout factors, is that it involves using different proxies for student outcomes since it cannot measure them directly.

In this study, by combining cross-sectional data with administrative records, we will examine how different proxies for student graduation outcomes, such as intentions to earn a degree, planned 'time-to-degree', thoughts of discontinuing, and fear of not graduating, relate to actual outcomes.

The Russian context

Doctoral training in Russia usually lasts between three and five years, depending on the field and mode of study. In 2023, there were 121,555 doctoral students overall in Russia, with 40,056 newly accepted students (Federal State Statistics Service, 2023). Of these, 87% of doctoral students study at universities, with the remainder at research institutes (12%) and other organizations (1%). Dropouts became one of the major issues in doctoral training in Russia since the number of those defending their theses in the year after obtaining a diploma has been steadily decreasing for decades, with only 11% in 2023 (Federal State Statistics Service, 2023). A further 20–30% defend their thesis more than one year after graduating with a diploma (Bednyi et al., 2019). In these cases, graduates do not have to re-apply to the program; they only need to apply for the defence-related procedures, which include the work of the reviewers, the committee and the defence itself.

During the study, PhD students are expected to take advanced courses, pass exams on their major and other disciplines, prepare and publish several papers, and write the manuscript of their thesis. They can withdraw or be expelled at any of these stages, which results in dropout students comprising a range of groups:

1) Students who voluntarily withdrew at different steps of a doctoral program.
2) Expelled students: students' progress is assessed at the end of every training year, and, if students do not meet the requirements, they can be dismissed.

3) Diploma holders without a degree: students who graduated and received a diploma but did not defend their thesis within the studied period.

Studies show that numerous factors contribute to the growing share of dropout students in Russia. The first group of factors includes various financial issues, of which general underfunding of the academic sphere and minimal financial aid are among the most important. Although 53% of doctoral students study for free (Bondarenko et al., 2024), students do not receive significant financial support. With the typical state stipend being five to ten times lower than the average income, most doctoral students combine their studies with work, which significantly lowers their chances of obtaining a degree (Bekova, 2020b).

Quality of supervision is another critical issue in Russian doctoral training, with supervisors often struggling with low pay, high workloads and a lack of support or professional development opportunities (Taylor et al., 2020). National guidelines on supervision cover only the formal aspects of supervision, such as the list of criteria for becoming a supervisor (publications, grants, etc.). Supervisors are compensated for only 50 academic hours per year for each doctoral student they supervise, which counts towards their teaching load. This number has remained unchanged for several years. It does not reflect the actual time required to adequately support each student (Taylor et al., 2020). Doctoral students in Russia are typically assigned a single supervisor, who acts as their main source of support and guidance throughout their academic journey. Academic staff holding a 'Kandidat Nauk' degree (equivalent to a PhD) or a 'Doktor Nauk' degree (an advanced research qualification like the habilitation in Germany) are eligible to supervise. Although students may also receive assistance from a consultant, this role is unpaid and lacks clear definition regarding its function and official status. Graduate schools are uncommon in the Russian university context. Typically, a doctoral study department administers entrance exams, annual attestations, final exams and defences, but these departments do not provide support for students or supervisors.

Formality and rigidity in the doctoral training system is another significant challenge. Characteristics include formal entrance exams, non-academic student motivations and non-adaptive doctoral programs. The entrance exams fail to reflect students' research experience, motivation, or skills, even though studies have shown that previous research experience is positively correlated with completion (Zhuchkova & Bekova, 2023). Exams usually include three tests: a foreign language exam administered by the institution's Foreign Language Department, a philosophy exam administered by the Philosophy Department, and a major-specific exam conducted by the department in which the student will study. The higher the exam scores, the better the chances of acceptance into doctoral programs. Such formal selection often leads to a substantial proportion of students with extrinsic motivations. Studies have shown that up to 39% of male doctoral students enter their programs to obtain a draft deferment (doctoral students can avoid mandatory military service during their studies and are permanently exempt if they obtain their degree), and up to 22% are driven by the prospect of obtaining a room in a dormitory (Bekova et al., 2017). Russian doctoral programs are rigid and remain predominantly academically oriented, as well as being defined as a source of staff for academia (Maloshonok & Bekova, 2024). Even though only around 40% of graduates continue to work in academia after obtaining their degree (Bednyi et al.,

2019), doctoral programs still focus on preparing students for academic careers and do not consider alternative career paths for their students.

Research methods

Data collection

The study is based on two sources of data: (i) several rounds of cross-sectional surveys of doctoral students and (ii) data on students' graduation outcomes collected from administrative records and websites about defences available at the end of 2021. The surveys were conducted by the Centre for Institutional Research at the Higher School of Economics (HSE). The University is a leading research-intensive institution, located in Moscow. In 2023, the university provided training for 1352 doctoral students across 22 PhD programs in STEM (science, technology, engineering and mathematics), management, social sciences, humanities and art. The university used surveys as a tool to monitor student experiences and gather data on a broad spectrum of topics: student satisfaction with university services, learning and research experiences, student assessment of doctoral supervision, characteristics of interaction with supervisors, students' motivations and plans, students' intentions, and key issues on their paths to obtaining a degree. A standardized questionnaire was employed consistently throughout the years of survey. Each May during the study, all students received an email invitation to complete a questionnaire online. Participation was voluntary, with informed consent integrated into the first page of the questionnaire, in which respondents were asked to tick a box if they agreed to participate in the study. The questionnaire was available for four weeks, and the average response rate across the rounds was 42%, which is higher than the typical response rate for online surveys (Nulty, 2008). The use of the collected survey data for secondary data analysis was approved by the HSE Institutional Review Board.

We merged four datasets, collected between 2015 and 2018, into a single dataset and supplemented it with information on confirmed graduation outcomes from university records. To verify this data, we parsed information from the official HSE website about thesis defences and conducted internet searches for students who may have defended their thesis at other institutions. The dataset is composed of unique rows, each corresponding to a unique student ID. We retained only one record per student; for those who participated in multiple rounds, we selected the most comprehensive record. In cases where multiple records were equally comprehensive, we chose the most recent one. The final dataset includes 618 doctoral students, of which 54% are women; 59% are from the social sciences, 20% are from STEM fields and 21% are from the humanities; and 29% have successfully defended their thesis. This foundational dataset will hereafter be referred to as Dataset 1.

From Dataset 1, we derived two subsamples. The first subsample, which will be referred to as Dataset 2, includes 202 doctoral students who were surveyed at least twice during their studies. We have retained all records from these students' multiple surveys. We will use this dataset to assess the changes in student plans over different survey years. The second subsample, Dataset 3, is taken exclusively from the 2018 survey year and includes 296 doctoral students. This subsample contains various indicators of students' intentions and therefore allows us to compare their ability to predict actual graduation outcomes.

Data analysis

The data were analysed using the SPSS and R. First, we characterized student intentions: if students planned to earn a degree and whether these intentions were dependent on demographics or field of study, and what their planned 'time-to-degree' was (Dataset 1). To measure student intentions, we recoded the estimated 'time-to-degree' variable into a dichotomy: 'Planned to earn a degree' and 'Did not plan to earn a degree'.

Second, we investigated how student intentions evolved throughout the academic journey based on Dataset 2. We compared the first and the last planned 'time-to-degree' period recorded across at least two survey rounds and created a new variable based on changes in student intentions with the following options:

- *Delayed plans to earn a degree by one year*
- *Unchanged plans to earn a degree*
- *Unchanged plans to drop out*
- *Delayed plans to earn a degree by two or more years*
- *Changed plans to drop out*
- *Advanced plans to earn a degree*

Third, we examined whether student predictions about obtaining their degrees aligned with their actual graduation outcomes. Prior research indicates that most Russian doctoral students surveyed during their studies expressed confidence in graduating, with only 5–7% doubting their ability to do so (Bekova, 2020b). However, data from the Federal Statistical Service (2023) suggest that approximately 90% of students do not graduate on time. To test this, we compared student intentions, as measured during their doctoral studies, with their actual graduation outcomes recorded several years after the expected graduation date.

Fourth, we assessed how various indicators that represented student intentions or concerns correlated with actual outcomes (using Dataset 3). We evaluated the following variables:

– Students' intentions to finish the program: doctoral students were asked about their intentions to earn a degree, with two options available regarding attrition plans ('*I do not plan to defend the thesis*'; '*I am afraid that I will not earn a degree*').
– Students' thoughts of quitting the program ('*I often want to leave the doctoral program*').
– Students' fears of not passing the next attestation ('*I am afraid I will not pass the next evaluation*'). We used this variable as an indicator of dropout plans because failing to pass the annual evaluation leads to expulsion, which essentially negates students' concerns about the possibility of dropping out.
– Students' fear of not finishing the program ('*I am afraid that I will never defend my thesis*').

The latter three variables were coded using a four-point agreement scale (from 1 = '*completely disagree*' to 4 = '*completely agree*').

Finally, to evaluate the validity of using intentions as a proxy for outcomes, we aimed to understand whether the same factors shaped students' intentions and student outcomes. Because both intentions (planning to earn a degree or not) and outcomes (earned a degree or not) are dichotomous variables, we used binary logistic regression analysis. We built two separate models with different dependent variables but the same set of independent variables. The independent variables included characteristics identified as significant in previous research:

Supervisor Characteristics:

1. Gender coded as 1 for *women* and 0 for *men*.
2. Degree level, specific to the Russian context (Taylor et al., 2020), in which 1 indicates '*Doktor Nauk*' and 0 indicates '*Kandidat Nauk*'.
3. Level of experience (Bair & Haworth, 2004). To assess supervisor experience, we collected information on how many other doctoral students each respondent's supervisor worked with, and how many of them obtained a degree. We then calculated the proportion of these students as a continuous variable.
4. Student assessment of supervisors (Van Tienoven et al., 2022) indicated by the desire to change supervisors – coded as 1 for '*yes*' and 0 for '*no*'.
5. Supervisor–student interaction (Zhao et al., 2007): (i) frequency of meetings per month (continuous variable); (ii) previous acquaintance with the supervisor (1 for '*yes*', 0 for '*no*').

Student Characteristics:

1. Motivation for enrollment (Litalien et al., 2015) assessed by reasons for enrolling, categorized as 1 for academic reasons (e.g., '*To improve research skills*', '*To build a career in academia*') and 0 for non-academic reasons (e.g., '*To secure a room in the dormitory*', '*To obtain a draft deferment*').
2. Academic career aspirations (Guccione & Bryan, 2023) measured by plans to work in academia after graduation, coded as 1 for '*yes*' and 0 for '*no*'.
3. Academic 'inbreeding' (Bekova, 2021), which shows whether students obtained their previous degree from the same university in which they are pursuing their doctorate, coded as 1 for '*yes*' and 0 for '*no*'.
4. Additional financial support (Spronken-Smith et al., 2018) – indicated by participation in an academic advancement program that provides a stipend comparable to a full-time salary, coded as 1 for '*yes*' and 0 for '*no*'.

By comparing these models, we aim to determine whether the predictors of actual outcomes, measured several years after graduation, differ significantly from the predictors of intentions obtained during the training period. In reporting the results, we included the odds ratios (ORs) and their 95% confidence intervals (CIs) to quantify the magnitude of the effects of each predictor. However, because the focus is the comparison of a set of factors related to different dependent variables, we will highlight the differences and commonalities between these models. We will report the effect size only when it significantly differs between intentions and outcomes and the effect is statistically significant.

Results

In this section, we will first report on student intentions to finish their program, followed by a discussion on whether these intentions have changed over time. Next, we will analyse the connection between student intentions and actual PhD graduation outcomes. Finally, we will consider the differences between factors that shape student intentions as proxies of graduation outcomes and actual degree attainment.

What are the student intentions?

During the survey, most students indicated that they planned to finish their doctoral program. Only 9% of surveyed students reported that they were unlikely to complete their degree. There were no statistically significant differences in intentions between gender groups, nor were there significant differences between students who had earned their previous degree at the same university or elsewhere. The mode of study, year of study, and employment status were also insignificant. Statistically, more students did not plan to defend a thesis among STEM students ($z = 2.3$) and fewer among social science students ($z = -3.0$). Most frequently, students planned to defend their thesis during three years, but students in their first and second years of study were more optimistic than students in their final years of study; the median estimated 'time-to-degree' for first- and second-year students is three years, while the median estimate for students in their final years of study is four years.

Did student intentions change?

The comparison of student intentions across different rounds of surveys showed that intentions changed over time (Table 1). Although 25.7% of surveyed students did not change their planned thesis defence date and another 18.8% did not change a plan to drop out, the remaining students (55.5%) did change their intentions between surveys.

Students became more pessimistic about their 'time-to-degree' with each passing year of study: most students surveyed for a second time during their second year of study did not change their plans (53%), while those who were surveyed again during their third year delayed their defence for one to two years (59.8%).

Are student intentions and confirmed graduation outcomes connected?

Student intentions, measured as a dichotomous variable, were found to be somewhat connected to graduation outcomes: the relationship is significant ($p < .001$) with a

Table 1. Changing student intentions.

Change of plans	% ($N = 202$)
Delayed plans to earn a degree by one year	35.1%
Unchanged plans to earn a degree	25.7%
Unchanged plans to drop out	18.8%
Delayed plans to earn a degree by two or more years	11.4%
Changed plans to drop out	6.9%
Advanced plans to earn a degree	2.0%

Table 2. The changing student intentions and confirmed graduation outcomes.

	Graduation outcomes	
Changing student intentions	Did not earn a degree	Earned a degree
Unchanged plans to drop out	100%	0%
Unchanged plans to earn a degree	58%	42%
Delayed plans to earn a degree by one year	66%	34%
Delayed plans to earn a degree by two or more years	65%	35%
Changed plans to drop out	93%	7%
Advanced plans to earn a degree	50%	50%

correlation coefficient of .18. This is relatively low compared with the mean correlation between intentions and behavior found in meta-analyses, which is around 0.53 (Sheeran, 2002). Although intentions to earn a degree showed a weak correlation with actual graduation, intentions regarding negative outcomes served as an adequate proxy ($z = 4.5$, $\chi^2 = 20.303$, $p < .001$). Almost all students who did not plan to finish their program did not end up earning a degree (98% versus 69% for those who planned to earn a degree).

Consistent intentions over time were more reliable ($\chi^2 = 21.324, p <, 001$) in accurately predicting a student's graduation outcome (Table 2). The change of intentions itself did not affect the student's chances of earning a degree: on average, the risk of not earning a degree was 71% overall, and among those who changed their intentions in any way, the risk was 69%.

Student intentions to earn a degree become more reliable with every year of study: the proportion of those who planned and defended their thesis is almost twice as high among third- or fourth-year students than among first- and second-year students (45.7% and 23.7%, respectively) and the correlation is significant, $r = .22$, $p < .001$.

Students were not always correct in estimating their 'time-to-degree' either (Figure 1). Most students who planned to defend their thesis in two or three years were incorrect in their predictions. In general, a longer predicted 'time-to-degree' is more accurate.

Figure 1. Planned and actual 'time-to-degree' (TTD). Note: The sum is less than 100% because three columns are excluded (one student defended their thesis in two years, one in seven years and one in thirteen years); and two rows are excluded (one student planned to defend their thesis in six years and one in seven years). The darker the color, the higher the match between planned and actual time to degree.

What about other dropout indicators?

To check whether other indicators used to measure student intentions are related to actual outcomes, we compared four different variables used in the same survey, and for each variable, a different proportion of students fell into the category of 'agreed' ($N = 296$):

- Student intentions to finish the program: 2.1% chose the options '*I do not plan to defend the thesis*' and '*I am afraid that I will not earn a degree*' combined.
- Students' thoughts of discontinuing: 27.5% chose the option '*I often want to leave the doctoral program*' (17.3% agree, 10.2% strongly agree).
- Students' fears of not passing the next attestation: 34% chose the option '*I am afraid I will not pass the next evaluation*' (22.4% agree, 11.7% strongly agree).
- Students' fears of not defending their thesis: 54.3% chose the option '*I am afraid that I will not defend my thesis on time*' (35.8% agree, 18.5% strongly agree).

Student concern about not passing their next attestation is the only variable related to graduation outcomes ($\chi^2 = 9.289$, $p < .05$). Students' thoughts of quitting their program and the fear of not earning a degree on time are not related to earning the degree.

What happens if we use intentions as proxies?

The comparison of two binary logistic regression models – one with student intentions as the dependent variable and the other with actual graduation outcomes – revealed both commonalities and significant distinctions (Table 3). Plans to pursue an academic career post-graduation and supervisor experience were positively associated with both student intentions to earn a degree and actual degree attainment.

However, significant distinctions were also evident. Academic motivations for entering the program were only associated with student intentions to complete their studies, not with actual graduation outcomes. Conversely, the actual completion of the program

Table 3. Comparison of logistic regression models of student plans and actual outcomes.

	Student Plans			Student Outcomes		
Predictors	Odds Ratios	CI	*p*	Odds Ratios	CI	*p*
(Intercept)	1.28	0.15–11.56	0.824	0.02	0.00–0.07	<0.001
Student gender (woman)	1.29	0.56–3.04	0.547	0.83	0.50–1.39	0.485
Year of study	1.28	0.79–2.17	0.346	1.52	1.16–2.00	0.003
Graduated from the same university	0.67	0.28–1.56	0.363	1.77	1.08–2.93	0.025
Advanced academic program	0.68	0.25–1.94	0.450	2.23	1.32–3.80	0.003
Supervisor gender (woman)	0.91	0.38–2.28	0.827	1.57	0.94–2.65	0.088
Supervisor's degree (Doktor Nauk)	1.49	0.62–3.60	0.367	0.85	0.51–1.40	0.518
Desire to change supervisor	0.37	0.14–1.06	0.053	0.36	0.11–0.94	0.053
Found the supervisor before entering the program	1.91	0.72–4.97	0.185	1.73	0.90–3.45	0.107
The proportion of those who earned a degree among all previously supervised students	1.05	1.01–1.10	0.013	1.05	1.03–1.06	<0.001
Frequency of meetings with the supervisor	0.92	0.66–1.30	0.651	1.18	0.96–1.44	0.113
Plan to build academic career	3.64	1.39–10.64	0.012	2.14	1.25–3.71	0.006
Academic motives for entering the program	2.77	1.12–7.71	0.036	0.95	0.57–1.57	0.832
Observations		413			413	
R^2 Tjur's		0.113			0.251	

was linked to more structural characteristics, such as whether students earned their previous degree from the same university or had received additional financial support. However, these factors were not significant for student intentions.

Discussion

This paper aimed to assess whether doctoral student intentions to complete or drop out correlate with their actual graduation outcomes. Based on the analysis detailed above, there have been several key findings.

First, there is a significant gap between positive intentions and confirmed graduation results, in a similar way to findings in other educational settings (Henderikx et al., 2017). Several reasons potentially explain why intentions do not always predict outcomes. According to Sutton (1998), intention itself might not be enough to determine behavior. There could be significant barriers that interfere with students' intentions, which leads to changes in plans (Fishbein & Ajzen, 2010). For doctoral students, such barriers may include financial issues (Spronken-Smith et al., 2018), problems with supervisors (Van Rooij et al., 2021) and difficulties in integrating and socializing (Boden et al., 2011), among others. Additionally, the desire to complete a degree program is socially favorable, which potentially inflates the percentage of students who expressed intentions to persist during the surveys. Finally, studies have shown that people often fail to make correct predictions even when they have had similar experiences before (Buehler et al., 1995). In the relatively new research environment of doctoral programs, it can be even harder to make accurate predictions. This is partially supported by our results which show that students in the later stages of their training make more reliable predictions.

Second, student intentions appear to be a more reliable indicator in the context of negative graduation outcomes. Those who initially planned not to complete their studies often ended up not graduating. Various factors could influence this trend. In Russia, for instance, students might enroll in doctoral programs without the intention of completing them, driven by motives such as draft deferment, relocating to a larger city with benefits such as dormitory accommodation, or they might simply be reluctant to leave the familiar university environment (Maloshonok, 2016). Alternatively, a lack of intent to finish could emerge during the study, which potentially indicates poor learning conditions, student dissatisfaction with their training, or shifts in their academic and career aspirations (Glorieux et al., 2024).

Third, our findings suggest that using cross-sectional proxies for graduation outcomes can lead to false positive results because student plans are related to different factors compared to actual outcomes. Such factors as academic career aspirations and supervisor experience are connected to both intentions and outcomes. Meanwhile, other factors, such as academic motivations or financial aid, play distinct roles in shaping intentions versus actual completion. Therefore, studies that use student plans or intentions as indicators of outcomes risk drawing misleading conclusions and could fail to identify significant factors that influence actual completion. This raises concerns about the reliability of recommendations based on such studies.

The results prompt a re-evaluation of how we understand graduation outcomes and the broader concept of success for doctoral students. Traditional research often views dropout behaviors from a university-centric perspective and treats non-completion as

negative due to its impact on institutional performance indicators and statistics, wasted resources and challenges in sustaining the academic workforce. Few studies acknowledge the potential negative consequences of dropping out on students' overall well-being (e.g., McCormack, 2005). It is important to recognize that not all doctoral students enter their programs solely to earn a degree; for some, the benefits of the program, such as professional networking, research experience, and clarity in career choice, are equally important. An alternative way in which to assess outcomes could involve investigating whether students achieved their personal objectives during their doctoral training while acknowledging that these objectives may extend beyond merely obtaining a degree. This broader approach to evaluating educational outcomes has been proven to have its advantages in prior educational research (e.g., Semenova, 2022).

Several limitations of the study should be considered when interpreting and applying the results. First, the study is based on the Russian case. Russia's doctoral education system has unique features, such as its program structures, supervisor–student relationships, and how doctoral education is funded and valued in society. These factors are specific to Russia and may not translate to other contexts. Despite these differences, many aspects and challenges of Russian doctoral programs are relatable elsewhere, such as the importance of supervisors for student outcomes, financial issues and high attrition levels. 'The Russian context' section should help readers to better understand these commonalities and differences.

Second, the study is based on data from one university – HSE. HSE's specific academic environment may not represent other Russian or international institutions, which could limit how broadly the study's findings apply. However, using data from HSE allowed us to gather information about actual completion rates and shape the study's design.

Finally, this study relies on pre-existing data sources, such as administrative records and past surveys, which were not originally intended for this research. This limited our set of indicators for predicting student intentions and outcomes. Nevertheless, this study can initiate a conversation about the accuracy of measuring doctoral students' outcomes. Collecting primary data, for which researchers can develop various indicators, can help to overcome the limitations of secondary data analysis. Testing these indicators and their relationships with actual results will help to determine whether there are valid proxies for student graduation outcomes that can be measured through cross-sectional surveys.

Apart from the methodological angle, future research could focus on understanding student plans, particularly negative ones. Who are the students planning not to finish before entering the program, and who decides to drop out during their studies? Is it necessary or possible to alter their intentions, and if so, how? Do students intending to persist or drop out differ in sociodemographic and academic characteristics? Are there inequality aspects involved in not planning to finish the program? What do we truly measure when we ask different questions about completion or dropout intentions? Obtaining answers to these questions will allow us to better understand doctoral students' decision-making processes and journeys.

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