



Will I be successful in my PhD? The role of person-environment fit for doctoral success

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Abstract

Undertaking a PhD is a personal commitment that involves considerable uncertainty, and many doctoral candidates face significant challenges along the way. However, few studies have examined pre-PhD predictors of later success. We propose that both the extent to which PhD candidates perceive their needs to be met by the supplies of a PhD (needs–supplies fit) and the extent to which their abilities match the demands of a PhD (demands–abilities fit) are promising predictors. Crucially, both forms of fit may be forecasted by prospective doctoral candidates even before entering a PhD program and may serve as predictors of subsequent doctoral success. We examined these relationships in two field studies in Germany. In Study 1 we assessed the relationship between perceived needs–supplies fit and demands–abilities fit with doctoral success through cross-sectional data from 812 candidates during their PhD. Results indicated that higher needs–supplies fit was associated with higher job satisfaction and lower dropout intention, while higher demands–abilities fit was associated with higher job satisfaction, perceived progress and lower dropout intention. Study 2 examined whether prospective doctoral candidates' forecasts of needs–supplies and demands–abilities fit could predict later doctoral success during the first PhD year in a longitudinal sample of 172 candidates. Needs–supplies fit forecasts predicted later job satisfaction and dropout intention, while demands–abilities fit did not robustly predict success outcomes. The findings provide initial support that fit forecasts may support prospective doctoral candidates and those advising them in making more informed decisions about whether to pursue a PhD.

Keywords Doctoral candidates · Person-environment fit theory · Fit forecasts · Doctoral success (job satisfaction, perceived progress, dropout intention)

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Introduction

Choosing to pursue a PhD is a significant commitment, often marked by uncertainty (Brailsford, 2010). Given this complexity, the decision to pursue a PhD might not be the “right” outcome for every individual (Mitic et al., 2025). This is reflected in evidence showing that many doctoral candidates experience decreased well-being (Levecque et al., 2017; Schmidt & Hansson, 2018) and that a substantial amount of doctoral candidates eventually discontinue their studies (Golde, 2005; Wollast et al., 2018). Research has already identified factors contributing to a successful PhD, including contextual influences like supervision (De Clercq et al., 2019) and personal factors such as perceived competence (Litalien & Guay, 2015). Yet, the pre-PhD phase as well as potential support strategies during this phase remain underexplored (e.g., Li et al., 2022).

To address this gap, we extend person–environment fit theory (Cable & DeRue, 2002; Edwards & Shipp, 2007) to doctoral studies, to better understand doctoral success - defined here as higher satisfaction, greater perceived progress, and lower dropout intention - and to explore whether fit assessments can predict these outcomes even before the PhD begins. We propose that two forms of fit are particularly relevant: the match between personal needs and environmental supplies (needs–supplies fit), and the alignment between personal abilities and environmental demands (demands–abilities fit; Cable & DeRue, 2002; Edwards & Shipp, 2007). These fits, whether experienced during or forecasted before the PhD, are assumed central to doctoral success. To investigate this, our research has three objectives: First, we aim to establish the relationship between fit *assessed during the PhD* and success. Second, based on forecasting theories (Merkle et al., 2024; Wilson & Gilbert, 2003) we assess whether prospective doctoral candidates’ self-assessed *forecasts* for needs-supplies fit, and demands-abilities fit assessed *before starting a PhD* predict later success. Third, based on forecasting bias theories (Merkle et al., 2024; Wilson & Gilbert, 2003), we examine whether the predictive value of fit forecasts varies as the PhD progresses. Against this backdrop, our research shows whether fit forecasts could inform decisions to pursue a PhD.

Fit as success factor for doctoral candidates

The affirmation that the decision to pursue a PhD was “right” often becomes evident through a successful doctoral experience. While the successful completion of a doctoral degree is often seen as the core indicator of doctoral success, we follow prior research (e.g., Heinze, 2018) in adopting a multidimensional view of academic success. This includes outcome indicators (degree attainment, duration, final grade) and process indicators like research productivity, satisfaction, and dropout intention. Subjective process indicators provide valuable insights early in the PhD when objective benchmarks vary. Accordingly, we focus on three commonly used indicators: job satisfaction (e.g., Sakurai et al., 2012), perceived progress (e.g., De Clercq et al., 2019), and dropout intention (e.g., Litalien & Guay, 2015).

To better understand what contributes to a successful PhD, we draw on person–environment fit theory which states that a high level of congruence (= fit) between a person and their environment is essential for thriving and optimal development in a specific (work) environment (Edwards & Shipp, 2007). Applied to the context of doctoral education, Ward and Brennan (2020) argue that challenges encountered during the PhD can also be understood

as different forms of misfit between the individual and the doctoral environment. Previous research often differentiates between needs-supplies fit and demands-abilities fit (see for example Etzel & Nagy, 2016). Needs-supplies fit refers to the extent to which the environment provides what individuals need to satisfy their inherent physical and psychological needs. Demands-abilities fit, on the other hand, refers to the alignment between the abilities (e.g., competencies, educational background) that an individual possesses and the requirements of a particular environment (Edwards & Shipp, 2007; Etzel & Nagy, 2016).

Higher fit relates to better satisfaction, persistence, and performance across contexts (Bäulke et al., 2022; Bogler & Nir, 2015; Cable & DeRue, 2002; Li et al., 2013; Merkle & Dickhäuser, 2024). In a qualitative study in the doctoral context, Gardner (2009) interviewed doctoral candidates on why they thought that some of their peers decided to drop out of their PhD. In 21% of the responses, reference was made to a “wrong fit” between individual and PhD, which resulted in reduced persistence. Golde (2005) found that a central reason for candidates leaving their doctoral programs is the realization that they lack the characteristics needed to thrive as researchers. For example, participants reported feeling inadequate in terms of their skills. Based on this theoretical background, we assume that higher needs-supplies fit and demands-abilities fit should relate to more doctoral success (Hypothesis 1).

However, while finding that a mismatch between personal characteristics and the environment translates into decreased success is certainly valuable, it still leaves the question as to whether this mismatch could have been avoided. In other words, it seems particularly important to evaluate the predictive validity of prospective doctoral candidates anticipated (= forecast of) fit or misfit with the PhD. While these fit forecasts may play a role in choosing a career trajectory (see Merkle & Dickhäuser, 2024, for fit forecasting processes in prior phases of higher education), it remains a central question whether and how strongly doctoral candidates should rely on their forecasts when contemplating a PhD.

Fit forecasts as predictors of doctoral success

Theories of (affective) forecasting (Conner et al., 2015; Wilson & Gilbert, 2003) and fit forecasting (Merkle et al., 2024) explain how individuals predict their future feelings and fit in work environments. Following Merkle et al. (2024), individuals draw on prior similar experiences to forecast their fit with future (work) environments (e.g. a study major, Merkle et al., 2024). According to person-environment fit theory, this fit, in turn, is crucial for success in that (work) environment (e.g., Cable & DeRue, 2002).

Building on this theoretical foundation, research shows that, by drawing on prior comparable experiences, individuals can make reasonably accurate forecasts about their future well-being, even before they encounter the actual situation or environment (e.g., Gilbert et al., 1998). Far less research has examined how fit forecasts predict specific success outcomes. However, studies on the transition to higher education, showed that high school students' perceived fit forecast for a specific study major not only predicted different aspects of their later well-being after enrolment but also intrinsic motivation within the respective study major (Merkle et al., 2024, interest fit; which is closely related to needs-supplies fit, Etzel & Nagy, 2016; Lubinski & Benbow, 2000). Additionally, perceived interest-major fit forecasts and abilities-major fit forecasts are related to several success indicators at the

beginning of the first semester such as motivation, satisfaction, negative affect and dropout intention (Merkle & Dickhäuser, 2024).

In the context of doctoral education, the role of fit forecasting has not yet been systematically researched, nor has it been formally implemented in students' decision-making processes. However, following Merkle & Dickhäuser (2024), we assume that prospective doctoral candidates often integrate such forecasts in their decision process and that such forecasts will somewhat shape future fit, and, as a result, later success. This is based on the premise that these candidates have spent many years gathering information about themselves in academic settings as bachelor's and master's students. If this premise holds true, those who anticipate a good fit with their PhD should, according to person–environment fit theory (e.g., Cable & DeRue, 2002; Edwards & Shipp, 2007), be more likely to succeed in their PhD. Nonetheless, it is unclear to which degree individuals' construal of the academic system and the supplies and demands of a PhD position might be biased (e.g. by wrong expectations) which may limit the predictive power of forecasts over time.

The diminishing value of fit forecasts over time

With regard to potential biases, we argue that prospective doctoral candidates should not only have an accurate understanding of themselves but also sufficient information about a specific PhD program in order to make meaningful fit forecasts (comparable to other educational transitions, see Merkle et al., 2024). However, several studies in the context of doctoral education show that initial expectations often do not reflect reality and are frequently inaccurate (Holbrook et al., 2014; Zerbe et al., 2020) with doctoral reality often worse than expected (Woolston, 2019). Furthermore, some implicit demands – such as unwritten rules of a PhD - might be inaccessible to students beforehand. This phenomenon is known as the hidden curriculum and can be especially impactful for minority students (Haeger et al., 2018). Misconstruing an event (e.g., unrealistic expectations about PhD demands and supplies) can in turn lead to biased (fit) forecasts (Merkle et al., 2024; Wilson & Gilbert, 2003). As candidates proceed in their PhD, it is increasingly likely that they discover that their initial expectations turn out to be wrong (Zerbe et al., 2020), which can alter their experience of doctoral success, independently of earlier fit forecasts. Based on these theoretical and empirical arguments, we propose that the predictive value of prospective doctoral candidates' fit forecasts for later doctoral success diminishes throughout their PhD as expectations gradually align with reality and shape perceived success independently of prior forecasts.

The present research

Taken together, we argue that a higher doctoral candidate's perceived needs-supplies/demands-abilities fit assessed *during the PhD* should relate to higher success (job satisfaction, perceived progress, dropout intention; Hypothesis 1). Establishing this association is a crucial prerequisite for examining the predictive validity of fit forecasts. In this regard, we suggest that *prospective* doctoral candidates, given their years of academic experience before the PhD, should be somewhat able to *forecast* their later fit to a PhD, which should predict their later success. Accordingly, we hypothesize that a higher forecasted needs-sup-

plies and demands–abilities fit predicts greater later success (Hypothesis 2). An overview of Hypotheses 1 and 2 is shown in Fig. 1.

Finally, we argue that prospective doctoral candidates’ forecasts are partly biased by inaccurate expectations. While these biases may not be evident immediately after starting the PhD, they may become more noticeable over time. We expect the predictive value of forecasts to decline as perceptions of the academic environment evolve. Therefore, we hypothesize that the predictive value of prospective doctoral candidates’ needs-supplies/demands-abilities fit forecast is stronger for early doctoral success experiences compared to later experiences (Hypothesis 3). It is important to keep in mind that our research was conducted in Germany, where most doctoral candidates have fixed-term part-time contracts as academic staff at universities (Douglas, 2022; Kehm, 2023). In this context, they independently work on their dissertation under the guidance of a supervisor (“master-apprentice model”, Douglas, 2022). Coursework is less common (Kehm, 2023) and tuition fees are typically not required. In contrast to countries like the UK, Germany typically does not offer professional PhDs. Admission criteria vary widely between university departments and graduate schools, encompassing criteria such as previous academic achievements, performance in assessment centers, presentations, or interviews. In university departments, admissions are often at the discretion of individual professors or supervisors, who may directly offer positions to students they consider well-suited for a PhD. In contrast, more structured programs, such as those offered by graduate schools, generally follow formalized admission processes (Hauss & Kaulisch, 2011). On average, PhD candidates need about 5.1 years to complete their PhD (Konsortium Bundesbericht Wissenschaftlerinnen & Wissenschaftler in einer frühen Karrierephase, 2025). There are no official attrition rates for Germany, however it has previously been estimated to be around 20% on average (Euler et al., 2018).

Study 1

Method

The aim of Study 1 was to examine whether perceived needs-supplies fit and demands-abilities fit are associated with doctoral success (job satisfaction, perceived progress, dropout intention) in doctoral candidates. Investigating this association is important to provide

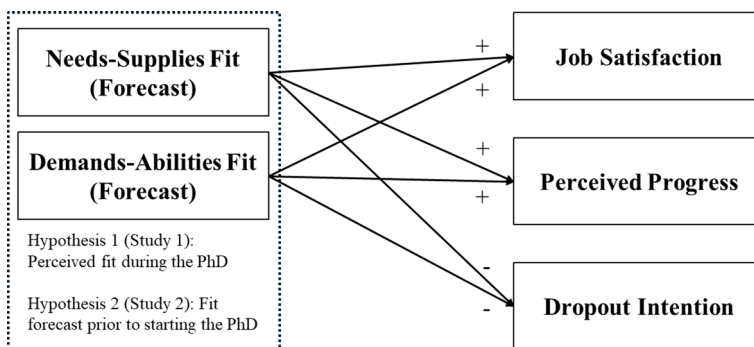


Fig. 1 Expected relations between fit (forecasts) and doctoral success

a boundary condition for the predictive power of forecasts: Forecasts of later fit are limited in their association with later success by the actual relevance of fit for this outcome. This means we can only accurately detect bias in forecasts if we know the boundary of potential associations. As such, the first study aims to provide insights into the boundary conditions of further research into forecasts.

Participants

We used cross-sectional data from a single timepoint (June 2024 to January 2025) within a larger longitudinal study tracking two cohorts (first/second vs. final PhD year) to explore doctoral work experiences and success. Participants were recruited through several universities, graduate schools, and scholarship organizations in Germany. Only participants who submitted the questionnaire on the final page and could be linked to the study registration were included in analyses ($n=812$; 64.4% female, $M_{\text{age}} = 29.65$, $SD_{\text{age}} = 4.87$). Additionally, we excluded participants who filled out the questionnaire in English ($n=135$) as the English version lacked equivalent validation to the German original and persons who did not provide answers to any of our variables ($n=1$). Participants were pursuing their PhDs across various disciplines (see Table A1 in the Appendix), with the largest proportion group in math or natural sciences (27.7%). 511 (62.9%) were in the first/early second year; 301 (37.1%) in the final year. We obtained informed consent from all participants. As an incentive, participants received PDFs on academic topics, personal mean scores on selected scales, a chance to win an electronic device, and triggered a €2.50 charity donation.

Measures

Perceived needs-supplies fit and demands-abilities fit We assessed needs–supplies and demands–abilities fit using adapted scales from Merkle et al. (2024) and Merkle and Dickhäuser (2024), based on Etzel and Nagy (2016), originally developed for study major fit and modified for the PhD context. Based on the item stem “I find that ...” we employed three items to measure doctoral candidates’ needs-supplies fit (e.g., “... the content that interests me in a profession is well covered by a PhD”, $\alpha = .79$), and three items to measure demands-abilities fit (sample item: “... the fit between my personal skills and the requirements of a PhD is very good.”, $\alpha = .78$). The items were rated on a seven-point Likert scale ($1 = \textit{not true at all}$; $7 = \textit{completely true}$). The full list of items is provided in Table A2 in the Appendix.

Job satisfaction We measured job satisfaction with two items, one asking for job satisfaction in general (“How satisfied have you been in the past three months, all things considered, with your work in general?”) and one focusing on the research part of the job (“How satisfied have you been in the past three months, all things considered, with your research-related activity?”). We assessed both items using a ten-point Likert scale ($1 = \textit{not satisfied at all}$; $10 = \textit{very satisfied}$). Given the correlation of $r = .69$, we use the mean score of these two items.

Perceived progress We assessed perceived progress in the PhD using a scale developed by De Clercq et al. (2019). We adapted this scale to specifically reference the preceding three months of the PhD by adding the prefix, “In the last three months of my PhD...”. The scale

comprises three items (sample item: "... I was progressing as planned.") that participants rated on a five-point Likert scale ($1 = do\ not\ agree\ at\ all$; $5 = agree\ completely$). The scale demonstrated satisfactory internal consistency ($\alpha = .73$).

Dropout intention To assess dropout intention, we adapted six items from a phase-oriented study dropout scale by Baulke et al. (2022) for the context of doctoral education. We specifically selected items from the phases "thoughts of quitting" and "final decision". A sample item is, "At the moment, I can't get rid of the feeling that I should quit my PhD." The items were measured using a 6-point Likert scale ($1 = completely\ disagree$; $6 = completely\ agree$). Internal consistency was satisfactory ($\alpha = .84$).

Control variables As life satisfaction is an important predictor of well-being within a PhD and, at the same time, is likely to influence current fit assessments due to optimistic versus pessimistic cognitive tendencies to evaluate one's life and, coherently, also specific areas in one's life, we controlled for it. We assessed life satisfaction using a single item: "All in all, how satisfied are you with your life?". Participants responded on a 10-point Likert scale ($1 = not\ satisfied\ at\ all$; $10 = completely\ satisfied$). Additionally, we controlled for the phase of the PhD to account for potential differences in how doctoral candidates perceive and assess their fit and success based on their level of experience. Therefore, we controlled for whether candidates were at the beginning or the end of their PhD. *Phase of the PhD* was assessed through an item assessed at the registration for the study, where participants indicated whether they were in the first twelve (Phase 1) or the last six months (Phase 2) of their PhD.

Data analysis

We tested our hypotheses by conducting path models using the lavaan package (R Version 4.2.2). In the first step, we tested needs-supplies fit and demands-abilities fit as predictors for job satisfaction, perceived progress, and dropout intention. In the second step, life satisfaction and the phase of the PhD (first/second year vs. last year of PhD) were included as covariates. For model estimation, we applied the maximum likelihood estimator with robust standard errors (MLR). Missing data were addressed using the full information maximum-likelihood (FIML) method. We allowed correlations between all outcomes and predictors, as we theoretically assumed that all predictors relate to all criteria. As such, we did not use the conducted path analysis to compare different structural models, but rather as a means to parsimoniously test multiple paths under control of each other at once. Consequently, our path model was saturated. In such cases, fit statistics are not informative for evaluating model fit.

Results

Means, standard deviations, and zero-order correlations for all variables in the path model are presented in Table 1. Consistent with previous studies, needs-supplies fit, and demands-abilities fit were strongly correlated ($r = .64, p < .001$). As anticipated, the zero-order correlations show that both needs-supplies fit and demands-abilities fit were positively associated with job satisfaction and perceived progress and negatively associated with dropout inten-

Table 1 Descriptive statistics and correlations for study variables in Study 1

Scale	M	SD	Scale Range	(1)	(2)	(3)	(4)	(5)	(6)
(1) Needs-supplies fit	4.89	1.36	1–7						
(2) Demands-abilities fit	5.18	1.17	1–7	.64**					
(3) Job satisfaction	6.50	1.92	1–10	.42**	.44**				
(4) Perceived progress	2.77	1.05	1–5	.20**	.25**	.45**			
(5) Dropout intention	1.61	0.83	1–6	-.49**	-.46**	-.50**	-.28**		
(6) Life satisfaction	7.36	1.89	1–10	.31**	.31**	.57**	.28**	-.41**	
(7) Phase of PhD ^a	-	-	-	-.11**	.05	-.02	.17**	-.02	-.08*

$N=812$. * $p < .05$. ** $p < .01$. ^a 0 = first two years of PhD, 1 = last year of PhD

Table 2 Results of the path model for the prediction of doctoral success (job satisfaction, perceived progress, dropout intention) by needs-supplies fit and demands-abilities fit in Study 1

Outcome Predictor	Job satisfaction			Perceived progress			Dropout intention		
	β	SE	R ²	β	SE	R ²	β	SE	R ²
Model 1:			.22			.07			.28
Needs-supplies fit	.23**	.05		.06	.05		-.32**	.05	
Demands-abilities fit	.29**	.05		.21**	.04		-.26**	.05	
Model 2:			.41			.15			.34
Needs-supplies fit	.15**	.04		.06	.05		-.29**	.05	
Demands-abilities fit	.19**	.04		.12**	.04		-.19**	.05	
Life satisfaction	.47**	.03		.24**	.03		-.26**	.04	
Phase of PhD ^a	.02	.03		.20**	.04		-.07*	.03	

$N=812$. * $p < .05$. ** $p < .01$. ^a 0 = first two years of PhD, 1 = last year of PhD

tion. Regarding our control variables, doctoral candidates in their final year reported greater perceived progress. Additionally, they reported lower needs-supplies fit and lower general life satisfaction compared to doctoral candidates in their first/second year. General life satisfaction was positively associated with needs-supplies and demands-abilities fit as well as with job satisfaction and perceived progress, and negatively with dropout intention.

In line with our hypotheses, the path analysis (see Table 2) revealed that higher needs-supplies fit was associated with higher job satisfaction and less dropout intention, but against our hypotheses, not with perceived progress. As anticipated, higher demands-abilities fit was linked to all three outcomes: higher job satisfaction, higher perceived progress, and less dropout intention. These associations remained consistent when controlling for general life satisfaction and the phase of the PhD. Needs-supplies fit and demands-abilities fit explained 28% of the variance in dropout intention and 22% in job satisfaction but explained considerably less variance (7%) in perceived progress¹.

¹ In a model examining the two phases of dropout intention as separate outcomes, with phase of PhD and life satisfaction included as control variables, needs-supplies fit was a significant negative predictor of both thoughts of quitting ($\beta = -.29, p < .001$) and final dropout decision ($\beta = -.22, p < .001$). Likewise, demands-abilities fit negatively predicted thoughts of quitting ($\beta = -.20, p < .001$) as well as final decision to drop out ($\beta = -.14, p = .011$).

Study 2

Building on the cross-sectional findings of Study 1, the aim of this study was to examine whether needs-supplies fit and demands-abilities fit *forecasts* assessed before starting a PhD can *predict later* doctoral success (job satisfaction, perceived progress, dropout intention) at different timepoints during the first year of the PhD.

Method

We used four waves from a seven-wave longitudinal field study originally conducted for another research purpose, tracking doctoral candidates from the end of their master's degree through approximately the first nine months of their PhD in Germany.

Participants

We recruited master's students and recent master's graduates from July to September 2023 who intended to pursue a PhD through their professors, study managers, and student councils across various disciplines and universities all over Germany. A total of 733 students participated (t0; before starting a PhD). Based on the reported month of PhD start, we contacted 418 individuals whose planned start fell within our study timeframe and contacted them in the third month following their planned start month (t1). 172 participants reported that they actually started a PhD, forming the sample for the present study. Prior, we excluded 13 participants who completed the questionnaire in English (see also Study 1) and 15 participants whose responses indicated that they had started their PhD before completing the initial survey. Analyses were based on participants who submitted the questionnaire on the last page at t1; likewise, only submitted questionnaires were included at all other time points. At t1, participants reported having spent an average of 2.41 months ($SD=2.25$) working on their dissertation.

After that, two more measurement points followed, with approximately 3-month intervals, henceforth referred to as t2 ($N=127$) and t3 ($N=119$). At t1, participants were on average 25.9 years old ($SD=2.12$). The doctoral candidates (65% female) undertook their PhDs in different fields (see Table A1 in the Appendix). 30.8% were the first in their family to obtain a university degree and 7.6% were not born in Germany. Participation in the study was voluntary, and informed consent was obtained for all participants. As a form of incentive, participants were provided with PDFs on academia-related topics, a summary of their average scores on certain scales (e.g., self-assessed fit for a PhD at t0), the opportunity to enter a prize draw for electronic devices and donated €2.50 to a charitable cause.

Measures

We assessed the predictors needs-supplies fit forecast and demands-abilities fit forecast along with the covariates life satisfaction and university GPA before participants started their PhD (t0). Job satisfaction, perceived progress, and dropout intention were measured approximately three (t1), six (t2) and nine months (t3) after the start of the PhD.

Fit forecasts (t0) We assessed needs-supplies fit and demands-abilities fit forecasts using an adapted version of the scales that we used in Study 1. Instead of the item stem “I find that ...” we used the item stem “I expect that ...” and framed the items in future tense. The internal consistency for needs-supplies fit forecast was below the common threshold of .70 ($\alpha = .62$), which can be acceptable for scales with a small number of items (Cortina, 1993; Loewenthal & Lewis, 2020). Internal consistency for demands-abilities fit forecast was acceptable ($\alpha = .74$).

University GPA (t0) As university GPA is an important predictor of performance in general, no matter which working environment, and at the same time is likely to influence current demands-abilities fit assessments, we controlled for university GPA in our analysis. We asked participants to report their university GPAs for both their bachelor’s and master’s degrees. If a participant had not yet received their final master’s grade, we requested that they provide an estimate. We then calculated the average of the bachelor’s and master’s grades. In Germany, a lower university GPA indicates better performance, while “1” is usually the best and “4” is the worst grade a person can pass with.

Job satisfaction, perceived progress, and dropout intention (t1, t2, t3), as well as life satisfaction (t0) were assessed as in Study 1. Internal consistencies of all scales were acceptable and are presented in Table 3.

Data analysis

We conducted three distinct path analyses corresponding to three different stages throughout the first doctoral year to investigate the predictive power of needs-supplies fit forecast and demands-abilities fit forecast for doctoral success (job satisfaction, perceived progress, and dropout intention). To achieve this, we examined needs-supplies fit forecast (t0) and demands-abilities fit forecast (t0) as predictors for job satisfaction, perceived progress, and dropout intention (either at t1, t2 or t3). Life satisfaction (t0) and university GPA were included as control variables in a subsequent step. All models were saturated, allowing for correlations in between all predictors and in between all outcomes. We employed the MLR estimator and accounted for missing data using FIML. In order to evaluate whether the predictive power of needs fit and abilities fit forecasts decreases, we compared the 95% confidence intervals of the beta weights. We thereby assumed that non-overlapping confidence intervals indicate a significant difference between the two beta weights.

Results

Means, standard deviations and zero-order correlations between all measures are displayed in Table 3. The zero-order correlations show that needs-supplies fit forecast was associated with all outcomes at all three measurement points, except for perceived progress at t3. Demands-abilities fit forecast was significantly correlated with all outcomes, despite job satisfaction, perceived progress and dropout intention at t3.

Table 3 Descriptive statistics and correlations for study variables in Study 2

Scale	M	SD	α	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
(1) Needs-supplies fit forecast t_0	5.16	1.02	.62												
(2) Demands-abilities fit forecast t_0	5.69	0.85	.74	.48**											
(3) Life satisfaction t_0	7.71	1.67	-	.19*	.23**										
(4) University GPA t_0	1.53	0.34	-	.02	-.10	.06									
(5) Job satisfaction t_1	6.95	1.71	.60 ^a	.29**	.20*	.20*	-.13								
(6) Job satisfaction t_2	6.98	1.81	.71 ^a	.36**	.22*	.20*	.00	.51**							
(7) Job satisfaction t_3	6.82	1.86	.63 ^a	.22*	.04	.07	.06	.40**	.62**						
(8) Perceived progress t_1	2.84	1.09	.82	.24**	.23**	.10	-.14	.54**	.43**	.30**					
(9) Perceived progress t_2	2.70	0.93	.72	.25**	.26**	.22*	-.11	.26**	.62**	.30**	.39**				
(10) Perceived progress t_3	2.69	1.01	.73	.18	.17	.07	-.04	.11	.32**	.49**	.35**	.36**			
(11) Dropout intention t_1	1.43	0.78	.86	-.24**	-.26**	-.21**	.18*	-.52**	-.32**	-.27**	-.30**	-.06	-.17		
(12) Dropout intention t_2	1.44	0.61	.76	-.37**	-.29**	-.25**	-.08	-.43**	-.47**	-.35**	-.26**	-.26**	-.15	.61**	
(13) Dropout intention t_3	1.48	0.77	.86	-.27**	-.04	-.13	-.06	-.23*	-.36**	-.43**	-.17	-.01	-.25**	.56**	.45**

$N=172$. * $p < .05$. ** $p < .01$. ^a As the scales only consist of two items, Pearson correlations are reported. GPA = Grade Point Average. t_0 = before PhD start; t_1-t_3 = approximately 3-month intervals in year 1

Predictive power for doctoral success at different stages in the PhD

The results of the three path models for the three different stages of the doctoral process can be found in Table 4. Regarding doctoral success at t1, the path analysis revealed that needs-supplies fit forecast positively predicted job satisfaction. Contrary to our hypothesis, the demands-abilities fit forecast did not predict any of the outcomes. This pattern persisted after adding the control variables. Regarding doctoral success at t2, a similar pattern to that observed for the prediction of doctoral success at t1 can be observed, with needs-supplies forecast additionally predicting dropout intention. Moreover, demands-abilities fit forecast significantly predicted perceived progress, however this finding did not persist after adding the control variables. Regarding doctoral success at t3, needs-supplies fit forecast again predicted job satisfaction and dropout intention, whereas demands-abilities fit forecasts remained non-significant. These results persisted after adding control variables².

Comparison of predictive power for doctoral success at different stages in the PhD

For all three facets of doctoral success, the confidence intervals for the prediction of needs-supplies and demands-abilities fit forecasts at the different timepoints showed high overlap, providing no indication for relevant differences in the predictive power over time (see Table 4).

General discussion

A PhD is a unique, long-term commitment often accompanied by diverse challenges. This makes it important to understand what contributes to doctoral success and whether there are factors that can be assessed *before* candidates commit, to better inform decision-making and selection. However, since research has mainly focussed on factors contributing to success during the PhD (e.g., De Clercq et al., 2019; Litalien & Guay, 2015), it remains unclear which factors should be taken into account when advising graduates contemplating a PhD or what universities should look for when hiring doctoral candidates. To address this gap, we examined the role of fit (forecasts) in doctoral success, using person-environment fit theory (e.g., Cable & DeRue, 2002) and affective forecasting theory (e.g., Wilson & Gilbert, 2003) in higher education (Merkle et al., 2024). In a first cross-sectional field study, even when controlling for life satisfaction and phase of PhD, we showed that higher needs-supplies fit as well as higher demands-abilities fit assessed *during the PhD* are both associated with higher satisfaction and less dropout intention in the PhD. Demands-abilities fit additionally was associated with higher perceived progress. In a second longitudinal study, we demonstrated that doctoral candidates' needs-supplies fit forecasts, *assessed before the start of their PhD*, predicted satisfaction during the first nine months of the PhD and dropout intention after six and nine months, but not perceived progress. Additionally, demands-abilities

²In a model examining the two phases of dropout as separate outcomes, with university GPA and life satisfaction included as control variables, needs-supplies fit forecast was a significant negative predictor of thoughts of quitting at t1 ($\beta = -.20, p = .025$), t2 ($\beta = -.27, p = .004$) and t3 ($\beta = -.29, p = .004$), as well as final decision at t2 ($\beta = -.18, p = .025$) and t3 ($\beta = -.21, p = .001$). Demands-abilities fit forecast was a significant negative predictor of final decision at t2 ($\beta = -.15, p = .045$).

Table 4 Results of the path model for the prediction of doctoral success (job satisfaction, perceived progress, dropout intention) by forecasts of needs-supplies fit and demands-abilities fit in Study 2

Outcome	Job satisfaction			Perceived progress			Dropout intention		
	t1	t2	t3	t1	t2	t3	t1	t2	t3
Predictor t ₀	β	β	β	β	β	β	β	β	β
Model 1:									
Needs-supplies fit forecast	.25** [.09, .40]	.31** [.13, .49]	.24* [.05, .43]	.16 [-.02, .33]	.15 [-.02, .31]	.11 [-.08, .31]	-.16 [-.32, .01]	-.29** [-.45, -.13]	-.30** [-.45, -.15]
Demands-abilities fit forecast	.08 [-.09, .25]	.08 [-.13, .29]	-.08 [-.29, .14]	.16 [-.01, .33]	.20* [.02, .37]	.12 [-.09, .34]	-.18 [-.45, .09]	-.16 [-.40, .09]	.10 [-.16, .35]
R ²	.09	.13	.05	.07	.09	.04	.08	.15	.07
Model 2:									
Needs-supplies fit forecast	.25** [.09, .41]	.31** [.13, .48]	.24* [.05, .42]	.17 [-.01, .34]	.15 [-.02, .32]	.12 [-.08, .31]	-.16 [-.32, .01]	-.28** [-.44, -.12]	-.29** [-.45, -.14]
Demands-abilities fit forecast	.03 [-.14, .19]	.04 [-.16, .23]	-.08 [-.28, .12]	.13 [-.05, .30]	.14 [-.05, .32]	.11 [-.11, .33]	-.12 [-.34, .11]	-.12 [-.32, .07]	.12 [-.09, .33]
Life satisfaction	.15 [-.02, .33]	.15 [-.05, .36]	.05 [-.19, .29]	.05 [-.12, .21]	.17* [.03, .31]	.03 [-.16, .21]	-.17 [-.35, .01]	-.19 [-.48, .11]	-.12 [-.38, .15]
University GPA	-.15 [-.30, .01]	-.02 [-.21, .17]	.03 [-.19, .24]	-.14 [-.28, .01]	-.12 [-.30, .06]	-.04 [-.23, .16]	.18 [-.01, .36]	-.07 [-.23, .08]	-.02 [-.16, .12]
R ²	.12	.15	.05	.09	.13	.04	.14	.19	.09

N = 172. * p < .05. ** p < .01. GPA = Grade Point Average. t₀ = before PhD start; t₁-t₃ = approximately 3-month intervals in year 1. Values in brackets are 95% confidence intervals of β coefficients

fit predicted perceived progress after six months; however, this effect did not remain robust when university GPA and life satisfaction were considered.

Theoretical implications

Our cross-sectional results align with person-environment fit research (Edwards & Shipp, 2007), showing that higher fit benefits satisfaction, persistence, and performance (e.g., Bogler & Nir, 2015; Li et al., 2013; Merkle & Dickhäuser, 2024). Extending this work, our findings indicate that fit is also important for understanding the experiences of doctoral candidates. Demands-abilities fit related to all outcomes, while needs-supplies fit was linked to satisfaction and dropout intention, but not perceived progress during the doctorate. The unexpected finding that higher needs-supplies fit is not associated with higher perceived progress may stem from the notion that for performance-oriented factors such as progress, possessing abilities that align with environmental demands (e.g., writing abilities to meet the demands of scientific publishing) may be more crucial than need fulfilment by the doctoral environment. This conclusion aligns with past research indicating the particular importance of demands-abilities fit for performance outcomes (e.g., Li et al., 2013).

Beyond these substantive findings, Study 1 also serves a conceptual function by establishing boundary conditions for the predictive value of fit forecasts. Since fit was measured during the PhD, not forecasted, the findings offer a necessary reference point for evaluating the predictive validity of fit forecasts in Study 2. That is, if a specific form of fit is not substantially related to doctoral success, forecasts of this form of fit would also be expected to be of limited value. Hence, the lack of a significant association between needs-supplies fit and perceived progress highlights the limits of what types of outcomes can realistically be predicted via fit forecasts. However, the findings from Study 1 are based on cross-sectional data and therefore do not allow for conclusions about the directionality or causality.

Against this background, we discuss our findings from Study 2 regarding the predictive value of fit forecasts for success outcomes, which suggests a more nuanced pattern across the two types of fit. In line with findings regarding similar constructs on prior stages of higher education (interest-major fit, Merkle et al., 2024), we find that the forecast of needs-supplies fit of prospective doctoral candidates is robustly predictive for later success. This effect wavers little over the course of the first year of pursuing a PhD. These findings imply that candidates are to a certain degree, able to make meaningful forecasts about their fit to a future PhD. This suggests that prospective doctoral candidates' needs-supplies fit forecasts are based on more accurate expectations than we initially considered – at least for the first phase of the PhD. Nevertheless, the same does not seem to be equally true for demands-abilities fit forecast before the start of the PhD which did not provide additional predictive power when included in a model alongside needs-supplies fit forecasts except for perceived progress at six months, a result that, however, did not remain robust after adding life satisfaction and university GPA as control variables. Since demands-abilities fit (not their forecast) was substantially related to success indicators in Study 1, it can be assumed that the lack of predictive power is not because a fit of abilities in the PhD is irrelevant, but rather that the forecasting of this type of fit is a challenge for prospective doctoral candidates. One possible explanation is that prospective doctoral candidates may struggle to distinguish between whether a PhD will fulfil their needs and whether they possess the abilities required to meet its demands, possibly because gaining insights into the specific ability requirements

of a PhD may only be possible to a limited extent. As such, the demands-abilities fit forecast of prospective doctoral candidates may largely be influenced by their needs-supplies fit forecast in a specific research topic rather than representing an accurate evaluation of their actual abilities. Similarly, prospective PhD candidates may overestimate their abilities (Holbrook et al., 2014). Many of them have been successful in previous academic tasks, which can boost self-efficacy (for a review see Usher & Pajares, 2008) and sometimes lead to overconfidence (Vancouver et al., 2002), even though they often have only limited knowledge and experience in academia. According to the Dunning-Kruger effect, such overconfidence effects might be especially prevalent in students who are less skilled for a PhD (Dunning, 2011).

In sum, our findings support a nuanced view on the predictive value of candidates' fit forecasts for success. While their forecast of needs-supplies fit indeed robustly resonates with later success indicators, the same cannot be said for the forecast of demands-abilities fit. As such, the predictive value of forecasts seems to strongly depend on the forecasted domain.

Practical implications

Our findings have clear implications for supervisors and graduate schools, which shape a PhD journey. When structuring a PhD, they should inquire about candidates' needs and abilities, especially during the transition, and offer appropriate learning opportunities. Low perceived fit can indicate that a candidate may benefit from additional support. Support may include reflecting on closing ability gaps (courses, detailed feedback) or reorganizing work content, tasks, or structure (for low needs-supplies fit). Since doctoral candidates are still in a professional socialization phase, mismatches between abilities and expectations are common, making faculty mentoring crucial for supporting persistence and development (see for example Posselt, 2018). Given the high degree of autonomy that many doctoral candidates experience in their work, doctoral candidates themselves are important players for establishing or maintaining fit. They could benefit from interventions that encourage them to regularly reflect on their needs-supplies and demands-abilities fit. Initiatives using a job crafting approach (Kooij et al., 2017) may be promising.

When it comes to the predictive value of forecasts, our findings suggest that prospective doctoral candidates fit forecasts have some capabilities in predicting their later success within the doctoral environment. Advisors (e.g., supervisors, lecturers) might capitalize from this by encouraging prospective doctoral candidates to reflect on whether they think that their needs are nurtured in a potential PhD. In addition, due to the lower predictive power of abilities-fit forecasts for future success, students may require additional support in accurately estimating their demands-abilities fit before the start of the PhD. Providing detailed information about specific doctoral programs could enhance informedness and help candidates assess their fit more effectively (see also Etzel & Nagy, 2016). In addition to clear communication of PhD demands, stakeholders should establish opportunities for prospective PhD students to experience these demands firsthand (e.g. internships, exchange opportunities with current doctoral candidates).

Although research on the practical use of fit forecasts in doctoral education is still in its early stages and such approaches have not yet been systematically implemented, there is considerable potential to explicitly integrate fit forecast instruments into the decision-mak-

ing process of whether to pursue a PhD. Such tools could serve as self-assessment instruments, enabling prospective doctoral candidates to reflect more systematically on their own needs, abilities, and overall fit with a potential PhD program. Given that traditional selection criteria sometimes lack predictive validity for later doctoral success (Miller et al., 2019), integrating (voluntary) fit assessments, as it is already common practice for the choice of a study major in Germany (Janke & Karst, 2025), could be a valuable approach to lead to more informed admission processes.

Limitations and future research

Against our initial assumption, there was no clear pattern of decline in the predictive value of forecasts over the first year, suggesting that even though doctoral candidates are most likely confronted with realities that do not match their initial expectations about a PhD, their forecasts about how well their needs are met in the doctorate still have a meaning in the reality of a PhD. Further research should investigate the development of the predictive power of fit forecasts over the course of the PhD, as it can be assumed that later phases of the PhD may hold challenges that especially jeopardize the satisfaction of one's own needs or abilities.

Beyond this temporal perspective, it is also important to consider the breadth of fit conceptualizations. While the present study focuses on demands–abilities and needs–supplies fit, other dimensions, such as cultural fit, may also influence PhD candidates' success, particularly for members of marginalized groups (Stephens et al., 2012). Importantly, such misfits should not be interpreted as shortcomings of individual candidates, but as structural barriers that universities and researchers need to address to foster a more inclusive academic environment (Posselt, 2018).

Further research is needed to test our proposed mechanism that fit forecasts assessed before the PhD predict later doctoral success mediated by actual fit assessed during the PhD. This is crucial for understanding whether a lack of predictive value stems from inaccuracies in forecasting or from an inherently weak relationship between fit and success. Our dataset, originally collected for a different hypothesis, was not designed to address this question and did not include assessments of fit throughout the first doctoral year for the sample that was also assessed before starting their PhD, limiting our abilities to investigate this issue directly. However, the observed associations provide a promising starting point for future studies to examine the underlying mediation processes. To build on these findings, future research should employ longitudinal designs tracking both fit forecasts and actual fit over time to distinguish forecasting accuracy from the fit–success relationship. Additionally, doing so would allow pondering about other mechanisms (e.g., employed strategies when noticing a “bad” fit).

Building on this, further research is needed to investigate what factors might improve forecast accuracy (particularly for demands–abilities fit forecasts), such as prior knowledge about a PhD, previous practical experience in academia (e.g., working as a research assistant), or the integration of doctoral courses into earlier phases of higher education studies. In doing so, future studies could focus more strongly on interventions, which would allow to facilitate research designs that might establish causality regarding the link between forecast accuracy and doctoral success more strongly than our research design, which can merely allow inferences on temporal order.

Continuing this line of research on the predoctoral phase, future studies should explore additional factors influencing later doctoral success particularly personal characteristics. In proposing this direction, we do not seek to downplay the importance of environmental factors during the PhD phase. Rather, the goal is to broaden the focus to pre-PhD factors. For instance, characteristics such as risk-taking behavior, and political navigation skills (Salwender et al., 2023) may indicate which students are more likely to succeed in academia. However, identifying these factors is only a first step. Research should explore how these traits predict long-term academic success and shape career decisions. This includes examining whether certain personal attributes are essential for high-quality academic work or whether they are primarily associated with successfully navigating potential shortcomings of the academic system. A better understanding of these dynamics could help to more effectively consider both individual and structural factors in career development.

Additionally, it is essential to recognize that the findings of our study specifically relate to the German higher education system. This system has unique characteristics that may not be directly mirrored in other countries, such as the highly individualized nature of PhDs. Consequently, some findings regarding the role of perceived fit and fit forecasts for doctoral success could be influenced by these country-specific factors. For example, doctoral candidates' demands-abilities-fit forecasts in other countries might be more meaningful for later doctoral success, as studies and PhD studies are more similar (e.g., coursework). Therefore, cross-cultural studies are needed to better understand how pre-PhD assessments such as fit forecasts relate to later success in different countries and systems. However, our study nonetheless reflects the transition from being a student to becoming a researcher - a shift that occurs in every academic system, regardless of the country, albeit at different points. As such, they provide valuable insights into supporting a successful transition.

Finally, we used a path modelling approach, as our primary interest was in the predictive relations among the scores used in practice (fit forecasts are applied as sum/mean scores by practitioners), and Study 2 had a small to medium sample size. Structural equation models were additionally estimated for robustness, but particularly the measurement model for fit forecasts showed unsatisfactory fit. Therefore, we retained path analysis as the primary method. Future research should replicate these findings using larger samples and more comprehensive measurement models. As our study was originally designed to address other research questions, only a limited number of fit (forecast) items were available, which should be expanded in subsequent research.

Conclusion

This study highlights the role of needs-supplies and demands-abilities fit in doctoral success. Both fit dimensions are associated with key outcomes such as job satisfaction, perceived progress, and dropout intention. Notably, even pre-PhD forecasts of needs-supplies fit hold predictive value for success. These findings underscore the potential of fit assessments to guide prospective doctoral students' decision-making and emphasize supporting them in forming well-calibrated judgments about their fit for a PhD. Future research should explore ways to enhance the predictive accuracy of such forecasts through institutional and advisory interventions, ultimately enabling more informed and sustainable career choices.

Appendix

Table A1 PhD subjects of participants in Study 1 and Study 2

Subject Area of PhD	Study 1		Study 2	
	<i>n</i>	%	<i>n</i>	%
Humanities	120	14.8	32	18.6
Education and Psychology	139	17.1	24	14.0
Law, Economics, Social Sciences	162	20.0	26	15.1
Mathematics and Natural Sciences	225	27.7	48	27.9
Medicine and Health Sciences	39	4.8	6	3.5
Engineering	49	6.0	26	15.1
Other	77	9.5	9	5.2
Missing	1	0.1	1	0.6

$N_{\text{Study1}} = 812$. $N_{\text{Study2}} = 172$

Table A2 Items for measuring needs-supplies fit and demands-abilities fit

	Used items	Self-translated English items
Needs-supplies fit		
NS1	Ich finde, dass die Tätigkeiten einer Promotion gut zu meinen Interessen passen.	I find that the activities of a PhD fit well with my interests.
NS2	Ich finde, dass die Inhalte, die mich an einem Beruf interessieren, von einer Promotion gut abgedeckt werden.	I find that the content that interests me in a profession is well covered by a PhD.
NS3	Ich finde, dass eine Promotion mir alles bietet, was ich mir von einem Beruf wünsche.	I find that a PhD offers me everything I want from a career.
Demands-abilities fit		
DA1	Ich finde, dass die Passung zwischen meinen persönlichen Fähigkeiten und den Anforderungen einer Promotion sehr gut ist.	I find that the fit between my personal skills and the requirements of a PhD is very good.
DA2	Ich finde, dass meine Kenntnisse zu den Ansprüchen einer Promotion passen.	I find that my knowledge meets the requirements of a PhD.
DA3	Ich finde, dass die Ansprüche, die in einer Promotion an mich gestellt werden, durch meinen bisherigen Bildungsweg gut abgedeckt werden.	I find that the demands placed on me in a PhD are well covered by my previous educational background.

Authors' contributions *Ronja Steinhäuser*: Conceptualization; data curation; methodology; formal analysis; writing – original draft. *Belinda Merkle*: Conceptualization; methodology; writing – original draft. *Johanna Ott*: data curation; writing – review and editing. *Martin Daumiller*: writing – review and editing. *Markus Dresel*: writing – review and editing. *Oliver Dickhäuser*: writing – review and editing. *Stefan Janke*: Conceptualization; writing – review and editing.

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Data availability Data will be made available on request.

Declarations

Ethics approval and consent to participate The presented research fully complies with ethical standards raised by the German Association of Psychologists (DGPs) and the American Psychological Association (APA). The study was approved by the Ethics Committee of the University of Mannheim under the approval number EK Mannheim 28/2018. We hereby confirm that the research reported in this manuscript complies with the Springer editorial policy regarding consent by human participants. All participants were informed about the purpose of the research conducted, that they could quit the questionnaires at any time and that all their responses would remain confidential.

Competing interests None of the authors have to report any conflicts of interest.

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References

- Bäulke, L., Grunschel, C., & Dresel, M. (2022). Student dropout at university: A phase-orientated view on quitting studies and changing majors. *European Journal of Psychology of Education*, *37*, 853–876. <https://doi.org/10.1007/s10212-021-00557-x>
- Bogler, R., & Nir, A. E. (2015). The contribution of perceived fit between job demands and abilities to teachers' commitment and job satisfaction. *Educational Management Administration & Leadership*, *43*(4), 541–560. <https://doi.org/10.1177/1741143214535736>
- Brailsford, I. (2010). Motives and aspirations for doctoral study: Career, personal, and inter-personal factors in the decision to embark on a history PhD. *International Journal of Doctoral Studies*, *5*(1), 15–27. <https://doi.org/10.28945/710>
- Cable, D. M., & DeRue, D. S. (2002). The convergent and discriminant validity of subjective fit perceptions. *Journal of Applied Psychology*, *87*(5), 875–888. <https://doi.org/10.1037/0021-9010.87.5.875>
- Conner, M., McEachan, R., Taylor, N., O'Hara, J., & Lawton, R. (2015). Role of affective attitudes and anticipated affective reactions in predicting health behaviors. *Health Psychology*, *34*(6), 642–652. <https://doi.org/10.1037/hea0000143>
- Cortina, J. M. (1993). What is coefficient alpha? An examination of theory and applications. *Journal of Applied Psychology*, *78*(1), 98. <https://doi.org/10.1037/0021-9010.78.1.98>
- De Clercq, M., Devos, C., Azzi, A., Frenay, M., Klein, O., & Galand, B. (2019). I need somebody to lean on. *Swiss Journal of Psychology*, *78*(2), 101–113. <https://doi.org/10.1024/1421-0185/a000224>
- Douglas, A. S. (2022). Dimensions of fit for doctoral candidates: Supporting an academic identity. *Research Papers in Education*, *37*(6), 954–974. <https://doi.org/10.1080/02671522.2021.1905704>

- Dunning, D. (2011). The Dunning-Kruger effect: On being ignorant of one's own ignorance. *Advances in Experimental Social Psychology*, 44, 247–296. <https://doi.org/10.1016/B978-0-12-385522-0-00005-6>
- Edwards, J. R., & Shipp, A. J. (2007). The relationship between person-environment fit and outcomes: An integrative theoretical framework. In C. Ostroff & T. A. Judge (Eds.), *Perspectives on Organizational Fit* (pp. 209–258). Lawrence Erlbaum Associates. <https://doi.org/10.4324/9780203810026>
- Etzel, J. M., & Nagy, G. (2016). Students' perceptions of person-environment fit: Do fit perceptions predict academic success beyond personality traits? *Journal of Career Assessment*, 24(2), 270–288. <https://doi.org/10.1177/1069072715580325>
- Euler, T., Trennt, F., Trommer, M., & Schaeper, H. (2018). *Werdgänge der Hochschulabsolventinnen und Hochschulabsolventen 2005: Dritte Befragung des Prüfungsjahrgangs 2005 zehn Jahre nach dem Abschluss*. Deutsches Zentrum für Hochschul- und Wissenschaftsforschung (DZHW).
- Gardner, S. K. (2009). Student and faculty attributions of attrition in high and low-completing doctoral programs in the United States. *Higher Education*, 58, 97–112. <https://doi.org/10.1007/s10734-008-9184-7>
- Gilbert, D. T., Pinel, E. C., Wilson, T. D., Blumberg, S. J., & Wheatley, T. (1998). Immune neglect: A source of durability bias in affective forecasting. *Journal of Personality and Social Psychology*, 75(3), 617–638. <https://doi.org/10.1037/0022-3514.75.3.617>
- Golde, C. M. (2005). The role of the department and discipline in doctoral student attrition: Lessons from four departments. *The Journal of Higher Education*, 76(6), 669–700. <https://doi.org/10.1080/00221546.2005.11772304>
- Haeger, H., Fresquez, C., Banks, J. E., & Smith, C. (2018). Navigating the academic landscape: how mentored research experiences can shed light on the hidden curriculum. *Scholarship and Practice of Undergraduate Research*, 2(1), 15–23. <https://doi.org/10.18833/spur/2/1/7>
- Haus, K., & Kaulisch, M. (2011). Auswahlverfahren an Graduiertenschulen. Eine explorative Studie. *Forschung und Förderung. Promovierende im Blick der Hochschulen*, 69–83.
- Heinze, D. (2018). *Die Bedeutung der Volition für den Studienerfolg. Zu dem Einfluss volitionaler Strategien der Handlungskontrolle auf den Erfolg von Bachelorstudierenden*. Springer. <https://doi.org/10.1007/978-3-658-19403-1>
- Holbrook, A., Shaw, K., Scevak, J., Bourke, S., Cantwell, R., & Budd, J. (2014). PhD candidate expectations: Exploring mismatch with experience. *International Journal of Doctoral Studies*, 9, 329–346. <https://doi.org/10.28945/2078>
- Janke, S., & Karst, K. (2025). Online Self Assessments as guidance systems for self-reflection and decision making in higher education – Broadly implemented yet poorly understood. *Zeitschrift für Pädagogische Psychologie*, 39(1–2), 1–9. <https://doi.org/10.1024/1010-0652/a000383>
- Kehm, B. M. (2023). International developments in doctoral education. Case study: Germany. *Innovations in Education and Teaching International*, 60(5), 668–676. <https://doi.org/10.1080/14703297.2023.2237963>
- Konsortium Bundesbericht Wissenschaftlerinnen und Wissenschaftler in einer frühen Karrierephase. (2025). *BuWiK 2025. Bundesbericht Wissenschaftlerinnen und Wissenschaftler in einer frühen Karrierephase*. wbv Publikation.
- Kooij, D. T., van Woerkom, M., Wilkenloh, J., Dorenbosch, L., & Denissen, J. J. (2017). Job crafting towards strengths and interests: The effects of a job crafting intervention on person-job fit and the role of age. *Journal of Applied Psychology*, 102(6), 971–981. <https://doi.org/10.1037/apl0000194>
- Leveck, K., Anseel, F., De Beuckelaer, A., Van der Heyden, J., & Gisle, L. (2017). Work organization and mental health problems in PhD students. *Research policy*, 46(4), 868–879. <https://doi.org/10.1016/j.respol.2017.02.008>
- Li, Y., Yao, X., Chen, K., & Wang, Y. (2013). Different fit perceptions in an academic environment: Attitudinal and behavioral outcomes. *Journal of Career Assessment*, 21(2), 163–174. <https://doi.org/10.1177/1069072712466713>
- Li, H., Jung, J., & Horta, H. (2022). The same starting line? The effect of a master's degree on PhD students' career trajectories. *Studies in Continuing Education*, 46(1), 20–37. <https://doi.org/10.1080/0158037X.2022.2117148>
- Litalien, D., & Guay, F. (2015). Dropout intentions in PhD studies: A comprehensive model based on interpersonal relationships and motivational resources. *Contemporary Educational Psychology*, 41, 218–231. <https://doi.org/10.1016/j.cedpsych.2015.03.004>
- Loewenthal, K. M., & Lewis, C. A. (2020). *An Introduction to Psychological Tests and Scales*. Routledge. <https://doi.org/10.4324/9781315561387>
- Lubinski, D., & Benbow, C. P. (2000). States of excellence. *American Psychologist*, 55(1), 137–150. <https://doi.org/10.1037/0003-066X.55.1.137>
- Merkle, B., & Dickhäuser, O. (2024). *Objective major-specific fit forecasts regarding interests, skills, and expectations predict motivation, choice and success in a major* [Preprint]. PsyArXiv. <https://doi.org/10.31234/osf.io/79r8m>

- Merkle, B., Messerer, L. A. S., & Dickhäuser, O. (2024). Will I be happy in this major? Predicting intrinsic motivation and subjective well-being with prospective students' well-being forecast and interest-major fit forecast. *Social Psychology of Education, 27*, 237–259. <https://doi.org/10.1007/s11218-023-09835-6>
- Miller, C. W., Zwickl, B. M., Posselt, J. R., Silvestrini, R. T., & Hodapp, T. (2019). Typical physics Ph.D. admissions criteria limit access to underrepresented groups but fail to predict doctoral completion. *Science Advances, 5*(1), eaat7550. <https://doi.org/10.1126/sciadv.aat7550>
- Mitic, R. R., Zhou, E., & Okahana, H. (2025). Factors predicting PhD affirmation and regret in PhD holders. *Humanities and Social Sciences Communications, 12*(1), 1–9. <https://doi.org/10.1057/s41599-024-04327-0>
- Posselt, J. (2018). Normalizing struggle: Dimensions of faculty support for doctoral students and implications for persistence and well-being. *The Journal of Higher Education, 89*(6), 988–1013. <https://doi.org/10.1080/00221546.2018.1449080>
- Sakurai, Y., Pyhältö, K., & Lindblom-Ylänne, S. (2012). Factors affecting international doctoral students' academic engagement, satisfaction with their studies, and dropping out. *International Journal for Researcher Development, 3*(2), 99–117. <https://doi.org/10.1108/17597511311316964>
- Salwender, M., Schoel, C., Bless, H., & Stahlberg, D. (2023). The politics hurdle: Joint effect of organizational culture and gender on lack of fit experiences. *Social Psychological and Personality Science, 14*(1), 84–92. <https://doi.org/10.1177/19485506221075898>
- Schmidt, M., & Hansson, E. (2018). Doctoral students' well-being: A literature review. *International Journal of Qualitative Studies on Health and Well-Being, 13*(1), 1508171. <https://doi.org/10.1080/17482631.2018.1508171>
- Stephens, N. M., Fryberg, S. A., Markus, H. R., Johnson, C., & Covarrubias, R. (2012). Unseen disadvantage: How American universities' focus on independence undermines the academic performance of first-generation college students. *Journal of Personality and Social Psychology, 102*, 1178–1197. <https://doi.org/10.1037/a0027143>
- Usher, E. L., & Pajares, F. (2008). Sources of self-efficacy in school: Critical review of the literature and future directions. *Review of Educational Research, 78*, 751–796. <https://doi.org/10.3102/0034654308321456>
- Vancouver, J. B., Thompson, C. M., Tischner, E. C., & Putka, D. J. (2002). Two studies examining the negative effect of self-efficacy on performance. *Journal of Applied Psychology, 87*(3), 506. <https://doi.org/10.1037/0021-9010.87.3.506>
- Ward, A. M., & Brennan, N. M. (2020). Developing a student-doctoral education fit analytical model to assess performance. *Studies in Higher Education, 45*, 1448–1460. <https://doi.org/10.1080/03075079.2018.1545758>
- Wilson, T. D., & Gilbert, D. T. (2003). Affective forecasting. In M. P. Zanna (Ed.), *Advances in Experimental Social Psychology* (Vol. 35, pp. 345–411). Elsevier Academic Press. [https://doi.org/10.1016/S0065-2601\(03\)01006-2](https://doi.org/10.1016/S0065-2601(03)01006-2)
- Wollast, R., Boudrenghien, G., Van der Linden, N., Galand, B., Roland, N., Devos, C., Klein, O., Azzi, A., & Frenay, M. (2018). Who are the doctoral students who drop out? Factors associated with the rate of doctoral degree completion in universities. *International Journal of Higher Education, 7*(4), 143–156. <https://doi.org/10.5430/ijhe.v7n4p143>
- Woolston, C. (2019). PhDs: The tortuous truth. *Nature, 575*(7782), 403–407. <https://doi.org/10.1038/d41586-019-03459-7>
- Zerbe, E., Sallai, G. M., & Berdanier, C. G. (2020, June). Projections as Preparation for Persistence: Exploring Expectations for Engineering Graduate School Paper presented at 2020 ASEE Virtual Annual Conference Content Access, Virtual On line. <https://doi.org/10.18260/1-2--35100>