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Dropout intention: a valid predictor of actual dropout?

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Abstract

Evidence on the extent to which dropout intention can serve as a valid predictor of dropout decisions remains scarce. This study first presents the results of a systematic literature review of 14 studies examining the relationship between dropout intention and actual dropout in post-secondary education (vocational education and training [VET] or higher education). Second, we examine a longitudinal dataset of prospective chefs surveyed at the beginning (t1), the second half of the first year (t2), and the second year of the dual VET programme (t3). We examine the relationship between self-reported dropout intention and trainees' actual dropout behaviour. Additionally, we analyse development profiles of trainees' dropout intention using latent profile analysis. The review results provide strong support for a significant positive relationship between dropout intention and actual dropout (effect sizes vary between studies and contexts/types of dropout). In line, aspiring chefs' dropout intention is significantly positively correlated with actual dropout ($r=0.201$). Three development profiles were identified during VET: (1) stable, low dropout intention, (2) stable, medium dropout intention, and (3) increasing dropout intention. We conclude that dropout intention is positively related to actual dropout. As the extent to which dropout intention actually leads to dropout behaviour in VET also depends on external factors (e.g., labour market situation, alternative options), the predictive power of dropout intention may be limited. This is suggested by the weak correlation between dropout intention and actual dropout and the profile of trainees with increasing dropout intention who nevertheless persisted until year 2 of VET.

Introduction

Empirical studies on dropout in different contexts often examine individuals' *dropout intention* instead of actual dropout, based on the fact that intention is expected to be positively related to dropout decisions (e.g., Webb and Cotton 2018 for higher education; Aarkog et al. 2018 for vocational education and training [VET]). One reason for this approach is that the assessment of actual dropout is not always possible or manageable. In these cases, dropout intention is used as an indicator of imminent dropout decisions or as a so called 'surrogate variable' (Dalton et al. 1999 on *intent to turnover*). This can also be the case in studies on dropout in VET, if individuals who drop out of VET do not take part in accompanying surveys or if official data on the various possible

subsequent tracks after terminating VET are lacking or cannot be matched with survey data. Another reason is that examining dropout intention provides valuable insights into the process of forming dropout decisions (e.g., Krötz and Deutscher 2021) and can avoid potential biases of retrospective surveys on actual dropout (e.g., Aarkog et al. 2018). In addition, in educational contexts, knowledge about individuals' dropout intention can be of important practical use in preventing actual dropout (Aarkog et al. 2018). Here, dropout intention can act as an 'early alert signal' (Krötz and Deutscher 2021) of dropout decisions.

However, there is still scant empirical evidence on the relationship between the intention to drop out and actual dropout in (vocational) education contexts. Moreover, there is a lack of longitudinal data on the development of dropout intention over the course of a programme. This would be necessary to further understand the mechanisms that lead to dropout decisions. In VET, it should be borne in mind that the decision to ultimately leave a training programme could depend on many different context factors (e.g., local labour market conditions, the availability of alternative educational opportunities, the time remaining in the training programme, the influence of peers, trainers, and colleagues; e.g., Rohrbach-Schmidt and Uhly 2015). In general, further research is necessary to examine the extent to which individuals' decision to leave a (vocational) educational programme is based on a (longer-term) thoughtful reflection process and whether dropout intention can actually serve as a surrogate or alert signal of actual dropout.

Consequently, this paper aims to provide further insights into the important but under-researched construct of dropout intention (in VET). We combine a systematic literature review and an empirical study to examine the following research questions:

- (1) To what extent is dropout intention related to actual dropout behaviour?
- (2) How does dropout intention develop over time?

First, we conduct a systematic literature review on research question 1, focussing on studies that provide evidence on the relationship between individuals' dropout intention and actual dropouts occurring afterwards. Since evidence for the field of VET is very scarce, the review takes a broader view on dropout decisions in *post-secondary education* (VET and higher education). The review results are reported in "[Empirical evidence on the relationship between dropout and dropout intention—A systematic literature review](#)" Section.

Second, the review is supplemented by an empirical study that focuses specifically on trainees in VET. Here we report both evidence on the relationship between dropout intention and dropout behaviour of trainees (research question 1) and on the development of dropout intention over the course of the VET program (research question 2). Development profiles are used to examine whether developments of dropout intention are homogeneous among trainees.

Dropout decisions

Dropout intention and dropout behaviour

The assumption of a positive relationship between the intention to drop out and actual dropout is plausible, as it is theoretically expected that dropout decisions are formed

over a certain period of time. Studies on dropout in higher education often build on the work of Tinto (1975). Here, dropout is described as a process and Tinto (1975, p. 93) postulates a predictive model that “seeks to explain the longitudinal process of interactions that lead differing persons to varying forms of persistence and/or dropout behavior”. Some studies on dropout in educational contexts also draw on the theory of planned behaviour to explain the relationship between intention and behaviour (e.g., Davis et al. 2002 for high school dropout; Dewberry and Jackson 2018, and Fichten et al. 2016 for dropout in higher education). The theory of planned behaviour claims that intention is a direct precursor of behaviour. The stronger an individual’s intention to perform a behaviour, the higher the likelihood of an actual occurrence of that behaviour, provided that the individual has actual control over the performance of that behaviour. Consequently, intentions are assumed “to capture the motivational factors that influence a behavior” (Ajzen 1991, p. 181). Together, individuals’ motivation (intention) and their ability (behavioural control) drive performance. Intention is, in turn, affected by individuals’ attitude towards the behaviour, subjective norm (perceived social expectations), and perceived behavioural control (self-efficacy; Ajzen 1991). The results of Davis et al. (2002) support the relationships propounded by the theory of planned behaviour for high school dropout and demonstrate that intention to remain in high school and perceived behavioural control explained 25% of the variance in actual dropout behaviour.

For work contexts, individuals’ persistence/turnover can also be related to the theory of work adjustment (Dawis and Lofquist 1984). This theory assumes that individuals seek to achieve and maintain congruence with their work environment. They achieve congruence when they are able to fulfil work requirements and are simultaneously satisfied with their work environment. Work adjustment is therefore regarded as a “continuous and dynamic process” (Dawis and Lofquist 1984, p. 55) and achieving a stable congruence manifests in an individual remaining in this work environment. In the context of VET, evidence of qualitative studies emphasises that trainees’ decision to drop out must be regarded as a process rather than a single event. Dropout decisions are formed over a period of time, during which trainees were already faced with challenges and managed to overcome certain problems (Jonker 2006; Lamamra and Masdonati 2008). Consequently, dropout decisions in VET are likely to be preceded by considerations about dropout—that is, by elevated values of dropout intention. Overall, the construct of dropout intention seems to have the potential to serve as a predictor or an indicator of imminent dropout decisions in VET.

However, several factors limit the predictive power of dropout intention on dropout behaviour. Generally, transferring dropout intention into actual dropout decisions would require a high degree of scope of action on the part of the individual, as well as the availability of alternative development paths. In the VET context, individuals’ alternative possibilities can be restricted by the (local) labour market, formal entry qualifications (for further general or higher education), or selection mechanisms of training companies (e.g., Rohrbach-Schmidt and Uhly 2015). Moreover, changing to alternative VET programs may result in certain waiting periods until the official starting time of the new programme. In addition, 23% of premature contract terminations in Germany are initiated by the training company (BIBB 2020). In these cases, a termination may come as a surprise to the trainee and is not preceded by individual consideration of dropping out.

Another limiting factor is the extent to which dropout intention can be measured adequately in surveys. Studies in VET typically assess trainees' dropout intention by asking them whether they considered terminating their training contract (e.g., Krötz and Deutscher 2021; Maué et al. 2023; Volodina et al. 2015) or how confident they are that they will complete their VET programme (e.g., Neuenschwander et al. 2018). It seems plausible that the exact phrasing of the item(s) may affect individuals' responses. Moreover, responses may be affected by typical biases occurring in survey instruments—for example, social desirability. Accordingly, even though approximately a quarter of trainees terminate their training contract prematurely in Germany each year (27% in 2021; BIBB 2023), in empirical studies, the self-reported dropout intention of trainees has repeatedly been demonstrated to reach very low mean values (right-skewed distribution; Krötz and Deutscher 2022; Maué et al. 2023; Volodina et al. 2015).

Regarding employee turnover in companies, studies provide mixed evidence on the relationship between turnover intention and turnover behaviour. Some results point towards turnover intention being a valid proxy for turnover behaviour (e.g., Sun and Wang 2017; van Breukelen et al. 2004) or a mediator between aspects such as integration or job satisfaction and turnover (e.g., Price and Mueller 1981). However, other results indicate that turnover intention and turnover are predicted by different factors (e.g., Cho and Lewis 2012; Cohen et al. 2016). The decision to leave VET is even more complex than turnover decisions, since reasons for and consequences of dropouts can be very diverse—ranging from an adjustment of vocational choices to leaving the educational system entirely (e.g., Holtmann and Solga 2023; Michaelis and Richter 2022). Therefore, the extent to which dropout intention is a valid predictor of dropout is even more unclear in the context of VET.

Development of dropout intention

The decision to drop out is expected to be formed over a certain period of time and dropout decisions are therefore regarded a process rather than a spontaneous incident (Dawis and Lofquist 1984; Tinto 1975). For the VET context, this assumption is supported by qualitative findings that indicate that trainees foster dropout decisions over a period of time. During this time, individuals already face and manage to overcome certain challenges (Jonker 2006; Lamamra and Masdonati 2008). In the context of higher education, empirical evidence indicate a significantly positive relationship between turnover intention across two measurement points in the study programme (e.g., Lent et al. 2015, 2016). Similar findings are reported on employee turnover decisions (e.g., Leineweber et al. 2021; Räsänen et al. 2020; Trépanier et al. 2023).

In the context of VET, to the best of our knowledge, no longitudinal studies have been carried out to date examining trainees' dropout intention over several measurement points. However, valuable insights into trainees' decision-making processes regarding dropout can be gained from an interview study by Aarkog et al. (2018) in the context of VET in Australia. In this qualitative approach, 31 trainees who were believed to be at risk of dropping out (based on information provided by vocational school teachers) were followed closely over a period of eight weeks. The results indicate that decision-making processes regarding dropout differ considerably between individuals. The authors identify four categories of development of *motivation to continue in the programme*: stable

development, positive development, unstable development (fluctuations, no systematic change), and declining motivation to continue the programme. Moreover, dropout decisions of trainees are influenced by a number of factors connected to both the VET programme and to individuals' private life.

Research questions and hypotheses

As described above, evidence on the relationship between dropout intention and actual dropout is still scarce—both for VET and other educational contexts. Consequently, this paper address the following research question:

(1) To what extent is dropout intention related to actual dropout behaviour?

To examine this research question, we conducted a systematic literature review. Since the number of studies in the field of VET is very small, the review was extended to include dropout decisions in post-secondary education (VET and higher education). Although dropout decisions in higher education differ from VET – for example, with regard to consequences and alternative opportunities for individuals – evidence from this context is still of interest (1) in order to better understand the formation of dropout decisions of young adults and (2) to gain insights into the context-specificity of these decisions. Therefore, the review provides empirical evidence on research question 1.

Additional evidence on research question 1 was gained from the analysis of a longitudinal data set containing dropout intention and dropout behaviour of prospective chefs (trainees in German dual VET programmes). In training programmes for prospective chefs, the share of premature contract terminations is amongst the highest of all occupations in VET in Germany (in 2021: 47%; BIBB 2023). This occupation therefore provides a good basis for examining the relationship between dropout intention and dropout, as a sufficiently large group of individuals that dropped out can be examined with respect to their prior reported dropout intention. Since dropout intention is expected to serve as an indicator of actual dropout, we hypothesise a significantly positive relationship between initially reported dropout intention and actual dropout decision of trainees (H1).

(H1) Dropout intention is positively related to actual dropout of trainees in VET.

To gain further insights into the construct of dropout intention, we also examined the development of trainees' dropout intention over the course of the training programme in cases where trainees continued their training programme. Therefore, our second research was formulated as follows.

(2) How does dropout intention of persisting trainees develop over time?

This is—to our knowledge—the first study to model a longitudinal development of dropout intention over the course of VET. This approach allows new insights into the stability of dropout intention over time. The qualitative results of Aarkog et al. (2018) on trainees at risk of dropout revealed very different development patterns of persistence intention over a period of eight weeks. Consequently, different development patterns of dropout intention across the course of 1.5 years of VET seem plausible as well. Accordingly, we expected to find different development profiles of dropout intention between t1 and t3 (H2).

(H2) Development profiles of dropout intention differ between trainees.

Since most dropout decisions occur rather early in the three-year training programme (with an average time in training of approximately ten months; Autor:innengruppe

Bildungsberichterstattung 2022; Michaelis and Richter 2022), dropout intention is not expected to be exceptionally high at t3 or to increase between t1 and t3. Rather, an identification of a sustained low or declining dropout intention (H3) would support the assumption of dropout intention being an indicator of imminent dropout decisions.

(H3) Dropout intention of persisting trainees is continuously low or declining over the course of the VET programme.

Empirical evidence on the relationship between dropout and dropout intention—a systematic literature review

Literature search and selection

To identify studies examining the relationship between dropout intention and actual dropout in further education contexts (higher education and vocational education), we conducted a systematic literature search in accordance with the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) approach (Moher et al. 2009). First, we searched for relevant literature on the platform EBSCOhost, including the following databases: Academic Search Premier, APA PsychArticles, APA PsychInfo, Business Source Premier, EconLit, and ERIC. Additional searches were conducted on VOCEDplus and the German database FIS Bildung. The search order included the following search string: 'Intention' AND ('dropout' OR 'drop out' OR 'attrition' OR 'retention' OR 'persistence') AND 'education'. For the German-language database, the search terms were translated into German. We intentionally used rather broad search terms to receive a high number of hits and to avoid excluding relevant articles. The literature search led to 4,783 hits (EBSCO: 2221; VocedPlus: 1501; FIS Bildung: 1061). After removing duplicates 4,746 articles remained. We also added five articles from other sources for examination: four of them were previously known by the authors, and one was mentioned in the articles identified by the literature search. Hence, a total of 4751 articles were the basis for the selection process.

To identify relevant literature, we carried out four steps (Appendix A, Fig. A1). First, the articles were pre-selected based on their title. In this step, we eliminated articles that referred to dropout decisions in different contexts (e.g., therapy sessions). Articles in educational contexts were eliminated if they, for example, focused on specific target groups (e.g., dropout due to teen pregnancy; dropout of individuals with special needs) or on single courses in educational programmes (e.g., dropout in Massive Open Online Courses). A total of 103 articles focused on dropouts during *compulsory school education* and were eliminated for the purpose of our study. After carrying out this first step, 315 articles remained and were assigned to the context of *higher education* ($n=201$) or *VET* ($n=110$) or a combination of both educational contexts ($n=4$). In a second step, these articles were further analysed based on their abstract. If the abstract did not mention dropout intention or actual dropout, the article was considered as irrelevant for the review. This step led to the elimination of 45 articles. The next step consisted of reading the full texts to assess their eligibility. In this step, certain studies had to be eliminated, since access could not be gained to the full text. After intensive searches in the local library stock and the internet, 33 full text articles were still not accessible. Seven authors were contacted via email (in the case of 26 articles, the authors' contact details were untraceable), which led to three additional full-text articles. Consequently, 240 full texts

remained for the analysis. Before commencing close reading, 102 articles were eliminated as they did not report empirical studies. Therefore, 138 full-text articles were read and evaluated regarding the relationship between dropout intention and actual dropout. Finally, we identified 13 articles that examined the relationship of interest. Two of them related to the context of VET, and eleven to the higher education context.

The original search was conducted in autumn 2020. An additional search was carried out in autumn 2023. We checked a further 944 sources, which did not produce any further relevant hits. However, we added a recently published article that was known to the authors and—for unknown reasons—did not appear in the search. Therefore, in the following section we report three studies for the VET context and eleven studies for the higher education context.

Results of the systematic literature review

In this section, we first discuss studies that focus on the relationship between dropout intention and dropout in the context of vocational education and training. This is followed by an examination of studies in the context of higher education. Information on the data, study objectives, methods, measurement of dropout and persistence intentions, and more detailed findings can be found in the tables at the end of the two subsections (Tables 1 and 2).

Vocational education and training

Three studies (Fieger 2015; Findeisen et al. 2024; Samuel and Burger 2019) analysed the relationship between dropout intention/persistence intention and dropout behaviour in the context of VET. Fieger (2015) found that the intention to complete VET significantly increased the likelihood of actual completion among Australian VET students. Findeisen et al. (2024) identified the intention to change occupations as a significant predictor of subsequent occupational changes. However, the effect of intention to change companies on actual company changes was not significant. The study by Samuel and Burger (2019) considered, among other factors, the influence of dropout intention on actual dropout. They found that an increase in dropout intention was significantly associated with an increase in the log odds of actual dropout. Table 1 below presents the main characteristics and more detailed findings of each study.

Higher education

Eleven studies that met our search criteria were identified in the context of higher education. These are divided into two subsections below. First, we discuss studies that examine the relationship between dropout intention and dropout (Bean 1982, 1983; Deuer and Wild 2018; Dewberry and Jackson 2018; Metzner and Bean 1987; van Duser 2017). The second subsection focuses on studies that examine the impact of dropout intention on actual retention in higher education (Bringle et al. 2010; Lent et al. 2003, 2016; Pascarella et al. 1983; Simpson et al. 1980). Again, the main characteristics and findings of the studies in the university context are summarised in Table 2.

Table 1 Findings in the context of vocational education and training

Authors and data	Objective of the study (referred to our interest)	Methods and predictors of dropout	Measurement of dropout intention or intention to complete/persist	Findings (relating to our interest)
<p>Fieger (2015):</p> <ul style="list-style-type: none"> - Sample: <ul style="list-style-type: none"> o Student Outcomes Survey (SOS): approx. 110,000 responses o Student Intentions Survey (SIS): approx. 11,000 responses - Australia 	<p>Examination of factors explaining the completion of vocational education and training</p>	<p>Logistic regression analysis including</p> <ul style="list-style-type: none"> - intention to complete, - (teaching/assessment/general) satisfaction, - payroll, - enrolment hours, - qualification level, - age 	<p>Instruments taken from the Student Outcomes Survey (SOS) and Student Intentions Survey (SIS) [items are not reported in the paper]</p>	<p>The initial intention to complete VET significantly predicted the probability of completing the programme (Coefficient: 4.35, SE = 1.10, $p < 0.001$, Margins = 0.73)</p> <ul style="list-style-type: none"> - Other factors, such as the number of course hours individuals are enrolled in, have a stronger influence on completion than intention
<p>Findeisen et al. (2024):</p> <ul style="list-style-type: none"> - $n = 498$ adolescents who entered dual VET and either participated in a later survey t2 or experienced premature contract termination - Switzerland 	<p>Examination of factors predicting actual occupational changes and company changes</p>	<p>Structural equation modelling considering constructs such as:</p> <ul style="list-style-type: none"> - anticipated and perceived P-J fit, - self-perceived work performance, - intention to change occupations and intention to change companies 	<p>Single-item measures (Neuenschwander et al. 2018)</p> <ul style="list-style-type: none"> - Intention to change occupation: 'How likely is it that you will complete an apprenticeship but change occupations during the process?' - Intention to change training company: 'How likely is it that you will complete an apprenticeship but change training companies during the process?' 	<p>Intention to change occupation significantly predicted actual occupational changes ($\beta = 0.40$, $p < 0.05$, $N = 97$) and was the strongest predictor of occupational change</p> <ul style="list-style-type: none"> - Intention to change companies did not significantly affect actual company changes ($\beta = 0.22$, n.s., $N = 58$)
<p>Samuel and Burger (2019):</p> <ul style="list-style-type: none"> - Data from Transitions from Education to Employment (TREE) project - $n = 4956$ adolescents, either in a general education (preparation for tertiary education) or vocational education track - Switzerland 	<p>Examination of the influence of several psychological risk and protective factors on dropout intention and actual dropout</p>	<p>Multilevel mixed-effects linear and logistic regression models considering</p> <ul style="list-style-type: none"> - dropout intention, - self-efficacy, - social support, - negative life events, - socio-demographic variables 	<p>Single-item measure (dropout intention)</p> <ul style="list-style-type: none"> - Question 'What do you generally think of your education (apprenticeship, pre-apprenticeship, school, etc.) lately?'; followed by the statement 'As soon as I find something better I will change my education/apprenticeship, and a seven-point scale with the statement 'I think this... 'from 'hardly ever' to 'almost always' 	<p>Although not the focus of the study, the authors also looked at the influence of dropout intention on actual dropout and found that a one-standard deviation increase in dropout intention was significantly associated with (on average) a .15-standard deviation increase in the log odds of actual dropout</p>

Table 2 Findings in the context of higher education

Authors and data	Objective of the study (referred to our interest)	Methods and predictors of dropout	Measurement of dropout intention or intention to complete/persist	Findings (relating to our interest)
<p>Bean (1982):</p> <ul style="list-style-type: none"> - n = 1513 college students (≤ 21 years) of which 18% dropped out - United States 	<p>Examination of various predictors of student dropout</p>	<p>Multiple regression, path analysis under consideration of constructs such as</p> <ul style="list-style-type: none"> - intent to leave/dropout intention, - courses and grades, - educational goals - practical value, - loyalty, or - major and job certainty 	<p>Two-item scale (intent to leave):</p> <ol style="list-style-type: none"> 1. 'Do you expect to return to this university next fall?' 2. 'Do you expect to be enrolled at this university one year from today?' 	<ul style="list-style-type: none"> - Dropout intention was the strongest predictor of student dropout for all four subgroups considered in the analyses (high-confidence women: $\beta = 0.71$, low-confidence women: $\beta = 0.59$, high-confidence men: $\beta = 0.55$, low-confidence men: $\beta = 0.41$) - For some other predictor variables examined in the models (e.g., practical value, loyalty) indirect effects through intention were larger than direct effects
<p>Bean (1983):</p> <ul style="list-style-type: none"> - n = 820 female college students (≤ 21 years) of which 20% dropped out - United States 	<p>Examination of various predictors of student dropout</p>	<p>Multiple regression, path analysis under consideration of constructs such as</p> <ul style="list-style-type: none"> - intent to leave/dropout intention, - satisfaction, - practical value, or - campus organisations 	<p>- Not reported</p>	<ul style="list-style-type: none"> - Again, dropout intention was the strongest predictor of student dropout ($\beta = 0.644$, $p \leq 0.001$), explaining 45.3% of the variance in dropout - Again, indirect effects through intention to leave were larger than direct effects in various cases (e.g., practical value)
<p>Bringle et al. (2010):</p> <ul style="list-style-type: none"> - n = 805 college students (271 enrolled in non-service-learning courses, 534 enrolled in service-learning courses) - United States 	<p>Examination of predictors of re-enrolment in the following academic year</p>	<p>Correlation analysis, mediation analysis under consideration of (the constructs)</p> <ul style="list-style-type: none"> - demographic information, - enrolment in service-learning, - (pre- and post-course) intention to graduate from this campus, - quality of the learning environment 	<p>Three-item scale (Intention to Graduate from this Campus):</p> <ol style="list-style-type: none"> 1. 'It is very important for me to graduate from this college.' 2. 'I definitely intend to re-enrol at this university next fall.' 3. 'I am very likely to complete my degree at this institution' 	<ul style="list-style-type: none"> - Both pre- ($r = 0.12$, $p < 0.01$) and post-course intention ($r = 0.32$, $p < 0.01$) were positively correlated with re-enrolment the following year - Results of mediation analyses show a direct effect of pre-course intention on re-enrolment ($\beta = 0.12$, $p < 0.01$). Besides, pre-course intention predicts post-course intention ($\beta = 0.56$, $p < 0.01$), which in turn exerts a significant positive influence on re-enrolment ($\beta = 0.15$, $p < 0.01$)

Table 2 (continued)

Authors and data	Objective of the study (referred to our interest)	Methods and predictors of dropout	Measurement of dropout intention or intention to complete/persist	Findings (relating to our interest)
Deuer and Wild (2018): - $n = 11,535$ dual higher education students - Germany	Validation of an instrument for the early detection of (dual) student dropouts	Mean comparison and receiver operating characteristic (ROC) analysis considering (the constructs) - dropout intention related to the study programme, and - dropout intention related to the training/VET company	Four-item scales (Deuer and Wild 2017): - Dropout intention related to the study programme. Example: 'Are you currently considering changing your study programme?' - Dropout intention related to the training/VET company. Example: 'Are you currently considering changing your training/VET company?'	- Both the scales <i>dropout intention related to the study programme</i> ($M_{\text{dropouts}} = 2.44$ respective $M_{\text{non-dropouts}} = 1.64$, $p < 0.001$, $d = .98$) and the <i>dropout intention related to the training/VET company</i> ($M_{\text{dropouts}} = 1.94$, $M_{\text{non-dropouts}} = 1.66$, $p < .001$, $d = 0.31$) indicated a higher intention to drop out among those students who later actually dropped out - The scale <i>dropout intention related to the study programme</i> (identifying 79% of non-dropouts and 59% of dropouts) explained actual dropouts better than the scale <i>dropout intention related to the training/VET company</i> (identifying 72% of non-dropouts and 43% of dropouts) - The intention to withdraw significantly predicted actual withdrawal ($\beta = 0.31$, $p < 0.05$)
Dewberry and Jackson (2018): - Study 1 (relevant to our objective): $n = 633$ students at a non-residential college - United Kingdom	Examination of factors predicting dropout intention and dropout	- Several factors (e.g., social integration, self-efficacy towards course) are analysed to predict intention to withdraw - With regard to (actual) withdrawal, only the influence of intention to withdraw is examined	Four-item scale (Intention to withdraw/quit) - Example: 'I am quite likely to quit [name of college] before my studies are finished.'	- The educational goals conducted a significant influence ($\beta = 0.53$; $p < 0.05$) on students' persistence (number of semesters students had been enrolled in the study programme)
Lent et al. (2003): - $n = 328$ engineering college students (analysis is based on $n = 287$ students) - United States	Examination of relationships between contextual variables and choice actions	Path analysis considering constructs such as - self-efficacy, - interests, or - educational goals (e.g., the plan to remain enrolled)	Four-item scale (educational goals): - Example: 'I plan to remain enrolled in the ... [school of engineering] over the next semester.'	- Path analysis revealed a significant influence of intended persistence on students' actual persistence ($\beta = 0.29$, $p < 0.05$)
Lent et al. (2016): - $n = 908$ engineering college students - United States	Examination of factors influencing student persistence	Path analysis under consideration of constructs such as - self-efficacy, - interests, or - intended persistence	Four-item scale (persistence goals): - Example: 'I plan to remain enrolled in an engineering major over the next semester.'	- Path analysis revealed a significant influence of intended persistence on students' actual persistence ($\beta = 0.29$, $p < 0.05$)

Table 2 (continued)

Authors and data	Objective of the study (referred to our interest)	Methods and predictors of dropout	Measurement of dropout intention or intention to complete/persist	Findings (relating to our interest)
Metzner and Bean (1987): - <i>n</i> = 624 nontraditional (part-time commuter) students - United States	Examination of factors explaining student dropout	Path analysis considering constructs such as - intent to leave, - GPA, - finances, - sociodemographic variables, - several study (programme) characteristics	Two-item scale (Intent to leave): 'Do you expect to return to this school next semester? Next year?'	- The intent to leave significantly predicted student dropout ($\beta = 0.281, p < 0.001$) - Only the GPA exerted a stronger influence than the intention on dropout
Pascarella et al. (1983): - <i>n</i> = 269 college students - United States	Examination of factors explaining college withdrawal and persistence	Multiple regression and path analysis considering constructs such as - sociodemographic information, - academic and social integration, or - intention (to re-enrol)	Single-item measure (Intention): 'It is likely that I will re-enrol at this university next fall.'	- In the study, the intention to re-enrol has the strongest influence of the included predictors on student persistence ($\beta = 0.34, p < 0.01$)
Simpson et al. (1980): - <i>n</i> = 777 students (554 continuously enrolled at the college, 106 who transferred to another college and 117 who left and remained out of college) - United States	Examination of determinants of college withdrawal/ dropout (considering different types of withdrawals and transfers to other institutions)	Mean comparison and logistic regression analysis under consideration of constructs such as - plan to remain enrolled, - sociodemographic information, - identity with family, or - political orientation	Single-item measure (attributed to the 'Commitment to College' dimension, which also addresses the question how hard students plan to study): 'Plan to remain enrolled?'	- Both transfers ($M = 2.3, p \leq 0.01$) and dropouts ($M = 2.1, p \leq 0.1$) in good standing (as classified by GPA) reported a significantly lower intention to remain enrolled at the start of their studies than continuing students ($M = 2.7$) - For the 'failure' groups (based on GPA), there were no significant differences in the intention to remain enrolled (compared to continuing students) - For those who were considering leaving, regression analysis revealed that an increase in GPA was associated with an increase in dropout - Students with a strong intention to stay were more likely to stay enrolled than others and were influenced by their grades in the expected way (better grades → lower dropout)
van Duser (2017): - <i>n</i> = 21 students - United States	Examination of the reasons for stopping or dropping out	Case study (interviews) considering constructs such as - dropout intention, - money and financial situation, or social factors	Qualitative study	- The majority of students who reported that they were going to transfer, stop out, or drop out did so in their second year

Dropout intention and dropout

In early studies on college student dropout (Bean 1982, 1983), intention to leave emerged as the strongest predictor across different groups of students. Bean also analysed indirect effects through intention to leave and found that in several cases the indirect effects accounted for a significant proportion of the total effects, and in some cases were larger than the direct effects. A third study, co-authored by Bean (Metzner and Bean 1987), also demonstrated that dropout intention significantly predicted actual dropout, with the only stronger predictor being grade point average (GPA). A more recent study by Dewberry and Jackson (2018) revealed similar findings, identifying a significant influence of the intention to withdraw on the actual withdrawal. The analysis by Deuer and Wild (2018) revealed that the constructs¹ *dropout intention related to study programme* and *dropout intention related to the training/VET company* made it possible to make a clear distinction between dropouts and non-dropouts. Further analysis suggested that programme-related dropout intention explained the actual decision (not) to drop out better than company-related dropout intention. In the only qualitative study included in this review, van Duser (2017) examined the reasons why (first-year) students plan to leave university (stop out or drop out). The author mentions that the majority of students who reported that they would transfer, stop out, or drop out actually did so in their second year.

Intention to persist/continue studies/graduate

Based on their analysis of reasons for dropping out of college considering different types of dropouts,² Simpson et al. (1980) demonstrated that students' *intention to remain enrolled* was significantly higher among continuing students than among both transfers and dropouts 'in good standing'. However, no significant differences were found between the failure group and continuing students. Additional regression analysis revealed that for those considering leaving, higher GPAs were associated with increased withdrawal. The authors pointed out that "quite unlike the traditional model of dropouts as failure, withdrawal is associated with success" (p. 211). However, students with a strong initial intention to stay (and with a vocational orientation) were more likely to persist, with their academic performance influencing retention as expected (better grades lead to fewer dropouts). Bringle et al. (2010) examined the relationship between participation in a service-learning course and (a) (both pre- and post-course) intention to graduate from this campus, and (b) re-enrolment (the following autumn semester) on a college campus. Both pre- and post-course intention to graduate from this campus were positively correlated with re-enrolment. Mediation analysis confirms these finding, indicating that both pre- and post-course intention to graduate from this campus significantly influenced re-enrolment. Other studies identified significant influences of educational goals (e.g., plan to remain enrolled; Lent et al. 2003) and intended persistence (Lent et al. 2016) on actual student persistence. In their analyses of predictors of student withdrawals, Pascarella et al. (1983) examined, among other factors, the influence of freshmen's

¹ Each construct is measured on a scale from 1 (=no intention of dropping out) to 4 (=intention of dropping out).

² The students' grade point average (GPA) is decisive for the classification between 'failing' (GPA below 2.3) or 'in good standing' (GPA above 2.3). The second distinction between 'transfers' and 'dropouts' is made using information on whether the students had attended another college after leaving their previous college (= transfers) or not (= dropouts).

intention to re-enrol at the same university in the fall on individuals' actual persistence/withdrawal behaviour and identified it as the strongest predictor of student persistence.

To summarise the main findings of the studies identified in the literature review, dropout intention consistently emerged as a significant positive predictor of actual dropout in both VET and higher education. All studies included in the literature review ($n=3$ for the VET context, $n=11$ for the higher education context) found significant relationships between dropout intention and actual dropout behaviour. In several studies, of all the predictors examined intention was the strongest predictor affecting actual dropout behaviour or persistence (e.g., Bean 1982, 1983; Pascarella et al. 1983). The results also underline that the relationship is different for different aspects or types of dropout. For instance, in their study on students in dual higher education programs, Deuer and Wild (2018) found that the difference between leavers and stayers was large for the intention to drop out from the study programme and small for the intention to drop out from the training company. Moreover, as the results of Findeisen et al. (2024) demonstrate, this relationship is in any case not equally strong for all types of dropout in VET (the effect of intention to change companies on actual company changes did not become significant for the small group of $N=58$ trainees with company changes).

Research design and methodology

Design and sample

We used a longitudinal design with three measurement points to examine aspiring chefs (trainees) during the first and second year of their dual VET programme. VET programmes in the hotel and catering industry in Germany are organised as dual programmes, with alternating blocks of practical phases and vocational school phases for a training period of three years. During the first year of training, vocational school phases are organised by regional vocational schools. From their second year of training onwards, trainees are pooled together at supra-regional vocational schools for their vocational school phases. Data collection took place during training periods at vocational schools. We contacted all the vocational schools in one German federal state to participate in the study aiming at collecting a sample consisting of trainees from all vocational schools in this federal state. Seventeen out of 24 regional vocational schools agreed to participate in t1 and t2; three out of four supra-regional vocational schools participated in t3. Data was collected during (t1) the first six months of first year of the dual VET programme (September 2016 to January 2017), (t2) the second half of the first year of the dual VET programme (February to July 2017), and (t3) during the second year of the dual VET programme (September 2017 to June 2018).

As typical for longitudinal designs, we experienced a certain amount of panel dropout. However, since trainees changed institutions between t2 and t3, we also gained further participants at t3. The distribution of participants over the three measurement points is presented in Fig. 1. Information on missing values and on the comparability of the different samples is presented in Sect. "Data analyses".

The total sample consisted of $n=583$ prospective chefs, 23.5% of whom were female (missing information: $n=7.2\%$). The mean age at the start of the VET programme was $M=20.06$ ($SD=4.77$). Out of all the trainees, 72.6% were born in Germany. The vast majority entered the VET programme with a low (34.6%) or intermediate school degree

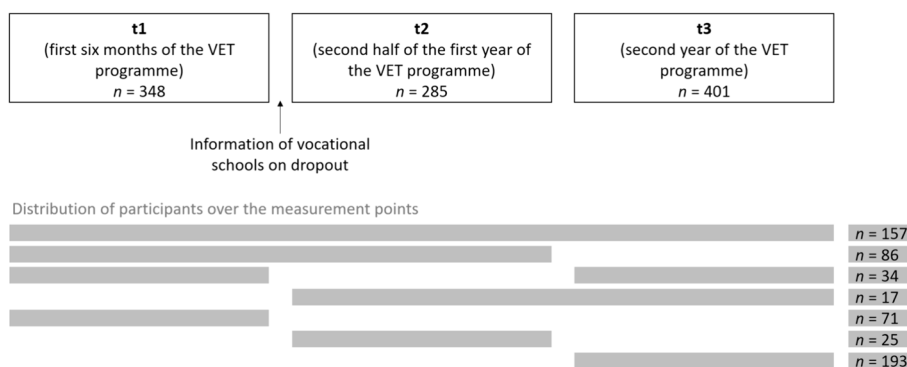


Fig. 1 Overview of measurement points and trainees’ participation

(40.0%), 15.8% had a university entrance qualification, 2.6% did not graduate from compulsory school before starting the training programme, and 5.1% stated ‘other’ qualifications (missing information: 1.9%).

Regarding parental educational background, 23.4% of the trainees indicated that their mother had no or a low school-leaving qualification (25.5% of fathers), 30.4% of mothers (and 21.5% of fathers) gained an intermediate school degree, and 25.5% of mothers (and 29.6% of fathers) a university entrance qualification. Moreover, 20.7% of trainees indicated that they did not know their mother’s educational background (23.4% for father’s educational background). In addition, 7% of the information on mothers’ educational background and 8.4% of the information on fathers’ educational background was missing.

The analyses are based on different sub-samples of this data set. For examining research question 1b, the data set was reduced to those trainees who participated in at least t1 or t2—hence excluding trainees that participated for the first time in t3. This resulted in $n = 390$ trainees.

To analyse the development of dropout intention (research question 2), we selected those participants who participated in t3—that is, trainees who still persisted in the second year of the VET programme ($n = 401$).

Instruments and constructs

Dropout intention

Trainees’ dropout intention was assessed based on a three-item scale created by Nägele and Neuenschwander (2015) which consists of three items (1 [inverted]: ‘I am determined to complete my VET programme.’; 2: ‘I can imagine dropping out of my VET programme.’; 3 [inverted]: ‘Nothing is more important to me than completing my VET programme.’). Trainees indicated their dropout intention on a four-point Likert scale ranging from 1 (*does not apply at all*) to 4 (*does fully apply*). Reliabilities (Cronbach’s alpha) were just acceptable for each measurement point ($\alpha_{t1} = 0.60$, $\alpha_{t2} = 0.68$, $\alpha_{t3} = 0.60$). However, the reliabilities could not be improved by elimination of items; the rather low values are probably caused by the small number of items (Taber 2018); Nägele and Neuenschwander (2015) report Cronbach’s alpha values of $\alpha_{t1} = 0.55$ and $\alpha_{t2} = 0.80$, respectively. We carried out robustness checks based on a two-item scales of both inverted items (item 1 and 3), as well as a two-item scale excluding item 3, which includes a more extreme formulation (‘nothing is more important to me...’). The results demonstrated

that the distributions of dropout intention as well as the results of correlation analyses are comparable for all three versions of the scale. Therefore, we decided to use the original three-item scale for further analyses.

Dropout behaviour

Information on trainees' actual dropout behaviour was obtained in cooperation with the vocational schools. At t2, vocational teachers indicated which of those students participating in t1 were no longer part of the training programme. We categorised individuals as dropouts only if there was certain information on their dropout behaviour. If teachers were not certain about a trainee's status, we did not categorise them as either a stayer or a leaver.

Data analyses

To examine the relationship between dropout intention and actual dropout of trainees (research question 1), we report the point-biserial correlation, which is a special case of the Pearson moment correlation for relationships between a continuous and a dichotomous variable. This analysis was conducted in SPSS (Version 29). In addition, we conducted a t-test between the group of stayers and leavers in relation to individual variables that have been demonstrated to affect dropout in VET (Holtmann and Solga 2023; Michaelis and Richter 2022), namely trainees' educational background, parental educational background, and country of birth.

To analyse different development patterns of dropout intention over time (research question 2), we conducted a latent profile analysis for those trainees who remained in training until year two (measurement point t3) of the VET programme ($n=401$).

Prior to the analysis, we evaluated missing values regarding the scales of dropout intention at the three measurement points. Since this data set was selected based on participation in t3, missing values on dropout intention are the lowest for this measurement point (0.5%). At t1, 55.1% of information on dropout intention was missing, while missing information accounted for 56.9% of the data at t2. The rather high number of unit non-responses at t1 and t2 can be explained by the organisational structure of the VET program for chefs and the respective resampling at t3 (see "Design and sample" Section). However, we have no reason to assume systematic missing information, since t3 took place at supra-regional vocational schools, where trainees from the t1 and t2 schools were pooled together. These schools have context factors (e.g., input characteristics of training companies and trainees) comparable to the regional schools at t1 and t2. This means that the contextual characteristics of the population of trainees remain relatively stable. To obtain more information about the missing data mechanisms and the validity of each sample, we first conducted a missing completely at random (MCAR) test devised by Little (1988) in SPSS (Version 29), testing the null hypothesis that the missing data is MCAR. The test revealed that the missing data patterns can be expected to be missing completely at random ($\chi^2(5) = 1.979, p = 0.852$).

Second, we contrasted sample characteristics of those trainees who participated in the survey from the start of the project and remained until t3 against those who were additionally sampled at t3 (due to the organisational structure of the vocational schools for chefs where data collection took place; see Table 3). We found differences with respect to trainees' sex (a higher proportion of females in the original sample)

Table 3 Characteristics of different samples compared to the total population

Characteristics	Original sample remaining at t3 (N = 208)	Additional sample at t3 (N = 193)	Entire sample at t3 (N = 401)	Total population of aspiring chefs starting in 2016 (N = 8670) ^a
Sex (female)	25.5%	21.9%	23.7%	23.3%
Age: M (SD)	20.5 (4.4)	22.1 (5.4)	21.3 (4.9)	20.9 ^b
Non-German citizenship	23.8%	25.0%	24.4%	23%
Highest school degree				
None	1.4%	2.1%	1.7%	6.7%
Low qualification	29.5%	36.2%	32.2%	37.1%
Intermediate qualification	51.2%	33.0%	41.9%	32.9%
University entrance qualification	13.5%	23.4%	18.0%	15.5%
Other	4.3%	5.3%	4.7%	7.7%

Based on data of beginning trainees per training occupation (BIBB 2019)

^a Depending on availability of information, data on the total population is reported for beginning trainees of the year 2016 (sex, citizenship) or 2018 (age, school degree), respectively

^b Mean age at the start of the training program, while at t3 the sample of this study is already in training year two

that seem to be generally acceptable, as they corresponded well to the sex distribution of the original sample. Moreover, there was a higher mean age in the additional sample than in either the original sample or the total population. This was caused by a small number of older trainees ($Max_{original\ sample} = 42$; $Max_{additional\ sample} = 55$). Since older trainees are not uncommon in VET, we refrained from excluding these outliers. The most significant difference occurred with respect to trainees’ school degrees. While the original sample included a higher share of trainees’ with intermediate qualifications, the additional sample contained an overrepresentation of trainees with university entrance qualification. However, taking both samples together at t3 cancels out most of the differences and achieves the highest level of agreeability with the total population. The larger share of trainees with higher school qualifications may be explained by the fact that only persisting trainees were sampled at t3 and school degree has been demonstrated to be related to dropout.

The latent profile analysis was conducted in Mplus Version 8.7 (Muthén and Muthén 1998–2017). Consequently, MPlus accounts for missing values and estimates profile affiliations for all participants. We sequentially estimated different models (ranging from a one-profile-solution to a five-profile-solution). Following Ferguson et al. (2020), we used the following indicators to identify the best solution—that is, the most suitable number of profiles. Concerning model fit, we referred to the information criteria *AIC*, *BIC* and *SABIC*, where lower values indicate a higher fit (Masyn 2013; Nylund et al. 2007; Tein et al. 2013). Regarding classification uncertainty, we used *entropy*. Higher entropy values indicate a better classification of the data, while an entropy above 0.80 indicates that the profile classification occurred with minimal uncertainty (Celeux and Soromenho 1996; Tein et al. 2013). In addition, we considered the size of the resulting profiles, which should not fall below 5% of the sample per profile (Masyn 2013; Wang and Wang 2012), as well as their interpretability (e.g., Marsh et al. 2004; Masyn 2013). Moreover, we referred to the Lo-Mendell-Rubin

Table 4 Differences between stayers and leavers with regard to individual characteristics

	Stayers (n = 286) M (SD)	Leavers (n = 51) M (SD)	T	p	d
Learner factors					
Educational background [1: low]	0.35 (.48)	0.52 (0.51)	− 2.217	0.027	0.17
Parental educational background [1: low]	0.16 (.37)	0.18 (0.39)	− 0.399	0.690	0.02
Country of birth [0: Germany, 1: other]	0.26 (.44)	0.47 (0.50)	− 2.835	0.006	0.21

(*LMR*) test, as well as the bootstrap likelihood ratio test (*BLRT*) to compare the estimated models. Here, a statistically significant test indicates that the current model fits the data significantly better than the more parsimonious model with one profile less (Ferguson et al. 2020).

In addition to describing the resulting profiles, we also compared them to the group of trainees that left the training program after t1 in relation to individual characteristics (trainees’ educational background, parental educational background, and country of birth) using one-way analysis of variance (ANOVA).

Results

Relationship between dropout intention and actual dropout

At t1, trainees on average reported rather low dropout intention ($M_{t1} = 1.49$; $SD = 0.60$); however, values ranged from $Min = 1.00$ to $Max = 4.00$. The point-biserial correlation between trainees’ dropout intention and actual dropout revealed a significant positive relationship between the two variables ($r = 0.201$, $p < 0.001$). While this result is in line with H1, the effect is nevertheless rather small.

A detailed comparison of the groups of stayers and leavers regarding individual characteristics (Table 4) revealed that the share of trainees with low educational background, as well as the share of trainees born outside of Germany, is significantly higher among leavers than stayers. However, parental education does not differ significantly between the two groups.

Development of dropout intention over the course of the training programme

A comparison of different profile solutions (Table 5) demonstrates that *AIC*, *BIC*, and *SABIC* decline with increasing numbers of profiles, suggesting the selection of a model with a high number of profiles. However, the entropy value reaches its maximum at the four-profile solution ($entropy = 0.966$). Moreover, while the *BLRT* test does not become insignificant, the *LMR* test indicates that a three-profile solution fits the data significantly better than a four-profile solution. Since the three-profile solution is the solution with the highest number of profiles that still contains more than 5% of individuals per profile, we ultimately decided to choose this model. This solution also allows a distinct interpretation of all three profiles that depict different development patterns over the course of the VET programme (supporting H2).

The three-profile solution results in the following three profiles (Table 6 and Fig. 2). Profile 1 contains trainees with continuously low dropout intention over all three

Table 5 Results of the latent profile analysis

Model	Log likelihood	AIC	BIC	SABIC	Entropy	Smallest class %	LMR <i>p</i> -value	BLRT <i>p</i> -value
1	− 660.907	1.333.814	1.357.748	1.338.710				
2	− 526.144	1.072.288	1.112.177	1.080.447	0.914	18.8	0.0032	< 0.0001
3	− 458.326	944.651	1.000.496	956.074	0.944	7.8	0.0051	< 0.0001
4	− 429.977	895.955	967.756	910.641	0.966	4.1	0.0509	< 0.0001
5	− 409.737	863.474	951.232	881.424	0.918	2.3	0.3945	< 0.0001

Table 6 Overview of the resulting three profiles

	<i>n</i>	Dropout intention: <i>M</i> (<i>SD</i>)		
		t1	t2	t3
Profile 1 (<i>stable, low dropout intention</i>)	288	1.27 (0.37)	1.27 (0.43)	1.10 (0.16)
Profile 2 (<i>stable, medium dropout intention</i>)	80	1.90 (0.63)	2.15 (0.60)	1.91 (0.27)
Profile 3 (<i>increasing dropout intention</i>)	31	1.70 (0.64)	2.42 (0.78)	2.95 (0.35)

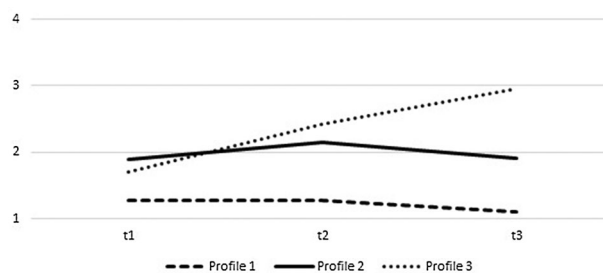


Fig. 2 Development profiles of dropout intention (three-profile solution). Likert scale: 1 (*does not apply at all*) to 4 (*does fully apply*)

measurement points – that is, across the first year and into the second year of VET. With *n* = 288 trainees, this is by far the largest profile. Profile 2 (*n* = 80) also describes a rather stable intention to drop out of VET. However, values in this group are significantly higher than in profile 1. Profile 3 (*n* = 31) depicts increasing dropout intention values which start off quite low (t1), but reach a rather high level in the second year of VET (t3). Therefore, H3 is not fully supported. While the majority of trainees exhibit stable and low, or at most mediate, dropout intention, profile 3 does report increasing dropout intention, thus contradicting H3.

To gain further insights into individual characteristics of trainees in each profile, we compared the profiles with respect to selected predictors that have been shown to affect dropout in VET (trainees’ educational background, parental educational background, and country of birth). In this comparison, we also included trainees who dropped out of their VET program after t1. The ANOVA results are presented in Table 7. We found significant but rather small differences with respect to trainees’ country of birth. Post-hoc tests revealed that significant differences occur between profile 1 and all other groups. However, the remaining groups did not significantly differ from each other. Moreover, there were no significant differences regarding educational background of trainees or their parents.

Table 7 Differences between leavers and three profiles of stayers regarding individual characteristics

	Profile 1 (n = 288) M (SD)	Profile 2 (n = 80) M (SD)	Profile 3 (n = 31) M (SD)	Leavers after t1 (n = 51) M (SD)	F	p	η^2
Learner factors							
Educational background [1: low]	0.35 (0.48)	0.39 (0.49)	0.44 (0.51)	0.52 (0.51)	1.85	0.138	0.01
Parental educational background [1: low]	0.14 (0.35)	0.18 (0.39)	0.23 (0.43)	0.18 (0.39)	0.72	0.540	0.01
Country of birth [0: Germany, 1: other]	0.13 (0.33)	0.51 (0.50)	0.53 (0.51)	0.47 (0.50)	29.57	<0.001	0.17

Discussion

The objective of this paper was to examine the relationship between dropout intention and dropout behaviour in order to gain further insights regarding the extent to which dropout intention can serve as an indicator (‘surrogate variable’, ‘alert signal’) of dropout decisions. To answer this research question, the paper was structured in two parts. We first conducted a systematic literature review including studies from post-secondary education (VET and higher education). This is the first systematic overview of empirical evidence on the relationship between dropout intention and dropout behaviour to provide valuable insights for future studies—not only regarding study design and instruments, but also regarding the decision-making processes of young adults concerning dropout. This review was supplemented by an empirical study on dropout (intention) among aspiring chefs. For this selected group of trainees in dual VET programmes we examined the relationship between dropout intention and actual dropout, as well as the development of persisting trainees’ dropout intention over time (Fig. 3).

The results of the systematic review consistently indicated a positive relationship between dropout intention and actual dropout; in some studies, dropout intention was the most important predictor of actual dropout. However, the extent to which dropout intention can be used as a valid indicator of imminent dropout decisions varies between different types of dropout intention (in relation to study programme or training company, Deuer and Wild 2018; for occupational changes or company changes, Findeisen et al. 2024).

The findings of the empirical study on trainees in VET revealed a significantly positive correlation ($r=0.201$) between dropout intention and actual dropout of prospective chefs (supporting H1). While this relationship is consistent with the review results, the relationship is weaker than those reported in the review. Consequently, some caution seems warranted when using intention as an indicator of dropout behaviour among aspiring chefs. This result may be explained by a lack of alternative paths from trainees due to labour market restrictions. Therefore, the extent to which dropout is a decision initiated by trainees themselves (i.e., their behavioural control regarding the dropout decision; Ajzen 1991) may be limited for this group of trainees. This is also one aspect where dropout from VET and dropout from higher education are not entirely comparable, since it is potentially easier to switch to a different higher education programme than to find a new training position. As most of the studies in the review were from the higher education context, the weaker results of our empirical study may be explained

by certain context differences. In this regard, dropouts from VET may be more comparable to employee turnover, where evidence on the relationship between intention and behaviour is mixed. Another reason might be that the measurement of dropout intention was not sensitive enough to validly assess trainees' intentions. Self-reported dropout intention was also rather low for leavers ($M = 1.76$ on a four-point scale). If the dropout intention of trainees who actually leave VET is not assessed sensitively by existing instruments, intention cannot serve as a warning signal for trainers and teachers to prevent dropout in VET. Since different dropout decisions are accompanied by different degrees of control for trainees (e.g., changing occupations by applying for a new VET programme vs dropping out into (temporary) unemployment due to insufficient performance in the VET programme) future studies should place more emphasis on a distinct assessment of different dropout directions. Moreover, a more differentiated analysis of cases in which actual dropouts occur despite low dropout intention, or where dropout could be prevented even though there was a high dropout intention at some point would be of interest. This also calls for additional qualitative studies, which are a valuable way to gain further detailed insights into decision-making processes. As we have seen, the literature review could only identify one qualitative study on the relationship between dropout intention and actual dropout.

Moreover, to gain further insights into the construct of dropout intention, we analysed the development of trainees' dropout intention over the course of the VET programme for those trainees who did not drop out during the first six months of VET. While dropout intention on average was very low over the entire sample and over all three measurement points (for similar findings see e.g., Krötz and Deutscher 2022; Maué et al. 2023; Volodina et al. 2015), a latent profile analysis revealed that three distinct development profiles can be identified, which is in line with H2 (Aarkog et al. 2018). The largest group of trainees (72.2%) exhibited sustained stable and low intention to terminate their training programme. Another 20.1% of trainees exhibited stable but more elevated dropout intention. The third profile (7.8%) reported increasing dropout intention between t_1 and t_3 . These results indicate that different individuals react differently to an educational environment in a continuous and dynamic process (Dawis and Lofquist 1984; Tinto 1975). The results also support the assumption that deciding to drop out is a dynamic process and that dropout intention can build up over time (Jonker 2006; Lamamra and Masdonati 2008). However, the finding that even trainees in profile 3 (increasing dropout intention and high values of dropout intention in t_3) still persisted in the VET programme underlines the fact that elevated values of dropout intention do not necessarily lead to actual dropout—for example, due to a lack of alternatives. This contradicts H3 and limits the extent to which dropout intention can be regarded a valid predictor of actual dropout.

Finally, we contrasted the stayers and leavers, as well as the three identified profiles, in relation to a selected set of learner factors that have been demonstrated to affect dropout in VET (educational background, parental education, country of birth). Here, the significant effect of migration background (a higher share of individuals born outside of Germany among leavers than stayers, as well as in profiles with elevated values of dropout intention; profiles 2 and 3) adds to the state of research. In previous research, a migration background was demonstrated to significantly increase dropout risks (e.g., Michaelis and Richter 2022). However, our results indicate that although dropout intention of

stayers with a migration background is elevated compared to trainees born in Germany, for the majority is stable (profile 2) and does not increase further with the progression of the VET programme (profile 3). This indicates that the difficulties of trainees with a migration background occur rather at the beginning of the training programme and are not primarily due to accumulating effect over the course of the training. A similar effect is found for trainees' educational background. While there was a larger share of trainees with low educational background among leavers than stayers (in line with existing results, e.g., Michaelis and Richter 2022), educational background did not vary significantly between different development profiles. This could also mean that challenges for trainees with low educational backgrounds (e.g., performance difficulties in vocational school) occur at the beginning of the training programme and may also lead to involuntary dropouts. However, these challenges do not significantly increase dropout intention over the course of the VET programme.

This study is subject to several limitations that need to be taken into account. The most crucial limitation is probably that we do not have specific information on the dropout behaviour of trainees. For instance, we cannot further distinguish between dropouts initiated by the trainees and those initiated by the training company. Moreover, the data set does not contain information on the reasons why individuals dropped out. There are several reasons (e.g., private reasons such as illness or pregnancy) that could lead to a premature contract termination without being preceded by any indication of dropout intention. We neither have information on the subsequent paths of trainees after their premature contract termination nor do we know whether trainees who persisted until year two actually went on to complete the training programme. Therefore, we do not have information on whether trainees in profile 3 actually drop out after t3. In addition, the latent profile analysis allows a rather general view on the most dominant development patterns. Individual cases with different patterns (e.g., decreasing dropout intention or continuous high dropout intention) are not detected by this approach, even though they might be of great interest in order to better understand the formation of dropout decisions. Again, this calls for further qualitative analyses, which seem worthwhile in order to do sufficient justice to individual development paths (e.g., Aarkog et al. 2018).

A second limitation has to be mentioned regarding the assessment of dropout intention. Here we used a three-item scale that only just reached the desired reliability values. Therefore, this methodological limitation needs to be taken into account. The weak relationship between dropout intention and actual dropout may be explained by an insufficient measurement of dropout intention. Moreover, we did not distinguish between different directions of dropout (see above). In addition, we examined only one training occupation out of approximately 320 occupations in dual VET in Germany (BIBB 2023, p. 58). Since the organisation and conditions of training programmes, as well as the characteristics of trainees, vary between training occupations, these results need to be replicated with a broader sample of trainees from different VET programmes. This is especially true since aspiring chefs are a specific group of trainees with particular training conditions (e.g., working hours and high pressure), and for a large group of these trainees alternative options outside this training programme are limited. This very likely also affects the relationship

between dropout intention and actual dropout (e.g., Rohrbach-Schmid and Uhly 2015), which might be higher in other occupational fields.

Third, limitations regarding the sampling need to be taken into account. Due to the structure of the VET program for aspiring chefs, additional trainees were sampled at t3, which led to a high number of dropouts. Analysis of the comparability of the different sub-samples yields rather positive results; however, these methodological limitations still need to be considered and may affect the transferability of results.

This study provides evidence on the relationship between dropout intention and dropout behaviour of trainees in VET, which has not been examined in any detail to date. The results imply that there is a significantly positive relationship between the two constructs. However, the relationship seems to depend on the context as well as the type of dropout examined. In VET, a degree of caution seems warranted when using dropout intention as an indicator of imminent dropout decisions. In this context, the degree to which dropout intention results in actual dropout depends on certain external factors (e.g., labour market restrictions and access to alternative paths). Consequently, dropout can only to a certain extent serve as a 'surrogate variable' (Dalton et al. 1999) or an 'early alert signal' (Krötz and Deutscher 2021) for dropouts.

This has direct implications for study design and assessment instruments, especially since data on actual dropout behaviour is not always easy to come by. Hence, this also underlines the necessity of reliable (longitudinal) data sets provided by the federal statistical offices in order to examine factors affecting the course of vocational training programmes more thoroughly.

Moreover, the results of this study underline the importance of learner factors (education and migration background) regarding dropout intention. In order to address unequal prospects of success for trainees from different backgrounds, suitable support systems for trainees in VET are called for. This is especially important in the initial phase of VET, in which most dropouts occur. However, as our results demonstrate, students with a migration background report elevated dropout intention in the second year of VET as well. Although trainees in our sample persisted, their dropout intention pointed to certain difficulties in the training programme. Therefore, continuous support is necessary to prevent this group of trainees from dropping out. As a practical implication, this calls for a certain effort on the part of training companies to assist new trainees in adjusting to their work environment and to support them in overcoming challenges and difficulties. Such an approach could, for example, help to overcome knowledge deficits and potentially reduce dropouts.

Appendix A

PRISMA scheme

See Fig. A1.

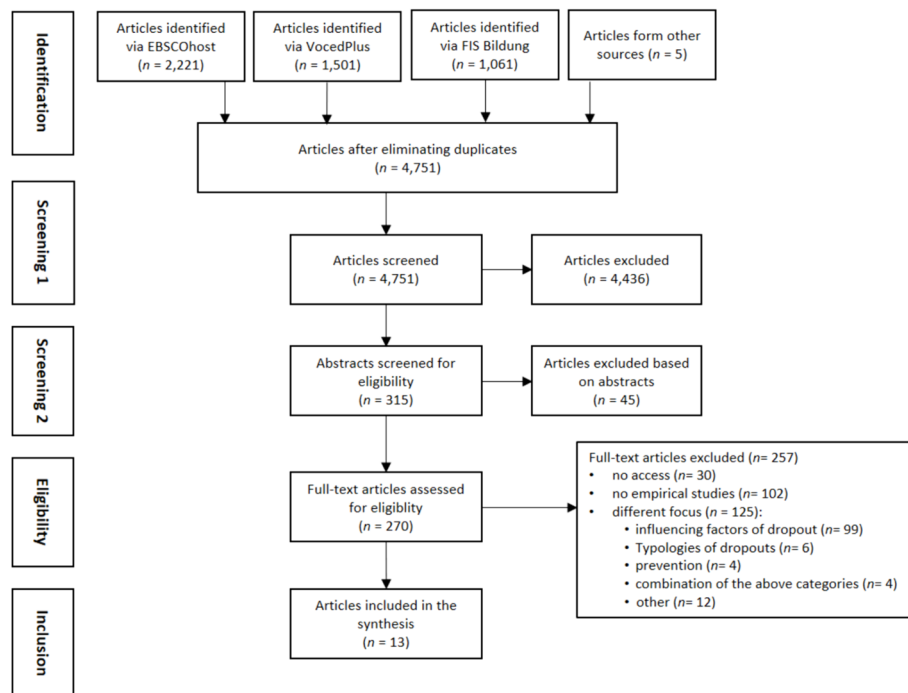


Fig. A1 PRISMA scheme of literature selection; initial search, autumn 2020 (based on Moher et al. 2009, p. 877)

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Author contributions

JS acquired the funding and managed the research project. SF collected the data and prepared the data set for analysis. All authors participated in the conceptualization of the paper. SF, BS and AB conducted the literature review. SF analyzed the data. SF and AB wrote the first draft of the manuscript. CM and JS edited the manuscript. All authors revised and approved the final manuscript.

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Availability of data and materials

The data is available from the corresponding author on reasonable request.

Declarations

Competing interests

Stefanie Findeisen and Christian Michaelis are guest editors of the thematic series “Dropouts in vocational and professional education”. Hence, this submissions was transferred to Stefan Wolter as Editor-in-Chief. The authors have no further conflicts of interest to declare.

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³ Studies included in the review are marked with an asterisk (*).

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