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Abstract

Graduates' education and its alignment with the first job are of key influence on graduates' career. It is argued that education-job fit affects work-related learning, which is important for recent graduates to cope with the demands of their new job. Theoretically, two (contradicting) processes have been put forward describing the relationship between education-job fit and work-related learning: Whereas the *complementing* hypothesis argues that work-related learning builds on existing competences, the *substituting* hypothesis assumes that work-related learning compensates in case of misalignment. These hypotheses were assessed by identifying latent fit profiles of recent graduates (N = 779) and comparing differences regarding work-related learning. Four distinct profiles were identified: full fit, horizontal fit, vertical fit, and full misfit. Results supported the complementing hypothesis, arguing that learning at work complements what was learned during higher education. Furthermore, this study demonstrated how fit profiles differently influence formal and informal learning activities.

Keywords: education-job fit; work-related learning; horizontal fit; vertical fit; school-to-work

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For young adults, entering a first job is an important turning point in their lives. Education is expected to prepare graduates for this step and lay the foundation for their future career (Teichler, 2007). Prior research demonstrated that education-job fit, which is defined as the alignment of graduates' education and their first job, can have long-term career effects (Verbruggen, van Emmerik, Van Gils, Meng, & de Grip, 2015). These career effects are mostly defined in terms of wages or promotion opportunities, although non-economic outcomes (such as wellbeing or career satisfaction) are of importance to graduates' careers as well (McKee-Ryan & Harvey, 2011). Likewise, work-related learning is argued to be a key outcome of fit when taking a career perspective (Brunello, 2004). Work-related learning is defined as the engagement in activities that lead to the development of competences, demonstrating its importance for employees to be able to cope with changes in a work environment (Kyndt & Baert, 2013). However, whether education-job fit fosters or hampers learning remains up for debate. Therefore, the present study aims to disentangle the relationship between education-job fit and work-related learning. A first step to reach this aim is to get a fine-grained view on the fit situation of recent graduates. Secondly, the study aims to investigate whether employees in these different fit situations differ in their work-related learning.

In trying to explain this relationship between education-job fit and work-related learning, two contradicting processes have been put forward in prior research. First of all, the *complementary process* argues that work-related learning *complements* an existing and appropriate set of competences (Brunello, 2004). Following this perspective, it is expected that employees who are in a job that fits their educational background learn more. In contrast, other studies argue that work-related learning could *substitute* for prior education in case of a misfit, which implies that learning is mainly relevant for employees who are in a job that does not fit their educational background. The substituting hypothesis thus implies that employees who are in a job that fits their educational background learn less (Heijke, Meng, & Ris, 2003).

Despite theorising on the topic, only a limited number of studies examined this relationship empirically and these studies found mixed results (Heijke et al., 2003; Brunello, 2004). These mixed

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findings partially result from different understandings and operationalisations of the constructs. First, studies have included different types of fit. Most research focused on *vertical fit*, including the extent to which the obtained level of education is aligned with the required level of education that is necessary for the job (Harari, Manapragada, & Viswesvaran, 2017). Recently, research has emphasised more strongly the fit between the field of study and the job, referred to as *horizontal fit* (Moore & Rosenbloom, 2016). However, it is theoretically argued that effects may be different depending on which type of fit is being investigated, demonstrating the necessity to increase understanding of the entire fit situation of employees taking both types of fit into account (Béduwé & Giret, 2011). Second, work-related learning is often interpreted in a narrow way, focusing on formal learning or training (Hurtz & Williams, 2009). These studies ignored the opportunities to learn in an informal way as stressed by Kwon and Cho (2017). Consequently, this study aims to address these shortcomings and empirically test the contradicting explanations by including different types of fit and a broad range of learning activities.

Theoretical Framework

Education-Job Fit

Education-job fit has increasingly been investigated and most attention has been devoted to recent graduates (Verbruggen et al., 2015). Education-job fit has important implications for practice, including policy and organisations. Prior research has pointed out high incidences of misfit (e.g., Finnie, 2004; Teichler, 2007; Verhaest & Omey, 2006), which results in a loss of (potential) resources at an organisational and societal level (difficulties in selection processes; frictions in the labour market; Okay-Somerville & Scholarios, 2014). However, most outcomes of fit were identified at the individual level, in which misfit results in negative outcomes for employees (e.g., wellbeing, performance; McKee-Ryan & Harvey, 2011). As suggested before, previous research on the topic shows some limitations that hamper a thorough understanding of education-job fit and its implications. First of all, although different types of education-job fit can be assessed – vertical and

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horizontal – most studies do not take (the combination of) both into account (Béduwé & Giret, 2011; Verhaest, Sellami, & Van der Velden, 2017). Second, variations in the way in which fit is measured result in inconsistencies across studies. These aspects will be discussed in the following sections.

Vertical and horizontal fit. *Vertical fit* concerns the degree to which graduates' educational level fits the required educational level of their job, for example an employee with a Master's degree working in a job that requires a Master's degree (Leuven & Oosterbeek, 2011). Vertical *misfit* is manifested in two different situations. The situation in which the educational level of the employee is higher than the required educational level for their current job is called *underemployment*. Underemployment tends to be quite common given the overall rise of the mean level of education in the population (Harari et al., 2017). This leads to an increase in the supply of workers with a degree in higher education, which potentially creates a tension between the supply and demand of employees (Verhaest & Omey, 2006). In contrast, in a situation of *overemployment* the level of education is lower than the required level for the job. The incidence of overemployment is quite low, which is not surprising given the demonstrated increase of the overall educational level of the population in Europe (Verhaest & Omey, 2006). *Horizontal fit* includes the degree to which employees' field of study is aligned with the field of study that is required by their job (Verbruggen et al., 2015). The current wide range of possible career trajectories create more flexibility for individuals, thereby also creating possibilities for a misalignment between the content of their educational background and their job (Verhaest et al., 2017). Although some studies recognise that education-job fit is more than merely vertical fit (e.g., Verbruggen et al., 2015), most research tends to solely focus on this vertical fit or remain unclear on the type of fit that is studied (Grosemans, Coertjens, & Kyndt, 2017). Hence, when aiming to get more insight in education-job fit of graduates, it is crucial to investigate the entire fit situation, including both vertical and horizontal fit.

Measuring education-job fit. Education-job fit is measured in a variety of ways in prior research, resulting in strong variations in the reported incidences of fit (Verhaest & Omey, 2006). Two common ways of determining fit can be found. A first approach is referred to as a *subjective*

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method, including a self-assessment approach that questions employees about the requirements of their job. Overall, employees overestimate the requirements of their job, which may be a consequence of a social desirability bias (Leuven & Oosterbeek, 2011). In combination with the overall rise in employees' educational level described above, this results in relatively high incidences of fit. A second way of measuring fit is considered to be a more *objective* method. This method starts from a description of the employee's job and his/her educational background. An external rater classifies these descriptions to determine employees' education-job fit. Studies using this method usually report lower incidences of fit and may even underestimate fit, as the classification systems struggle to keep up with the changes in the contents of both existing and newly created jobs (Verhaest & Omey, 2006).

In conclusion, education-job fit is a well-researched topic, especially in the case of recent graduates. However, true advancement of the field is hampered because of the difficulties encountered when trying to compare results across studies. A first reason for this relates to the different types of education-job fit (vertical and horizontal fit) that are investigated. Moreover, despite their importance, the potential effects of their combination were largely neglected up until now, (Béduwé & Giret, 2011). A second aspect that makes it difficult to compare studies is that different measures are used (subjective and objective), which each have their own (dis)advantages and thus provide different results (Leuven & Oosterbeek, 2011). Therefore, when aiming to draw reliable conclusions about fit, it is recommended to include different types of fit (i.e., vertical and horizontal fit), as well as different measures of fit (i.e., objective and subjective fit) (Verhaest & Omey, 2006).

Work-Related Learning in the Transition to Work

It is often assumed that graduates have developed the necessary skills to perform their new job (Heijke et al., 2003). This assumption is generally too optimistic, as educational programmes can never provide graduates with all necessary knowledge, skills, and attitudes for an entire career,

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especially given the level of flexibility and innovation that is expected nowadays (Teichler, 2007). This indicates how the need for learning does not stop after graduation and employees need to continue to learn at work. Such work-related learning is defined by Kyndt and Baert (2013) as participation in learning activities that can be either formal or informal, leading to an improvement in competences. This definition points to the nature of the learning activities that can be formal or informal. *Formal learning activities* are those activities that are structured and planned in time, for which the goals are clear. Informal learning activities are embedded in daily work and are generally less structured (Kyndt & Baert, 2013). As informal learning gets a central role in daily life, a broad range of informal learning activities can be distinguished. Therefore, informal learning is often divided into subcategories (Kwon & Cho, 2017). Author et al. (2019) make a distinction based on the used source of learning, in which two forms are distinguished: learning using personal and environmental sources. *Informal learning using personal sources* concerns learning from interacting with others (such as colleagues or supervisors) or learning from oneself. Examples are asking information from others, observing how others perform a certain task, or reflecting on a task. *Informal learning using environmental sources*, in contrast, involves learning behaviour using sources present in the environment, for example reading a book or watching visual material (Author et al., 2019). To get a more fine-grained view on the role of work-related learning, it is essential to consider a broad range of both formal and informal learning activities in line with its definition (Van der Klink, Van der Heijden, Boon, & Williams van Rooij, 2014).

Relating work-related learning to the transition to work, prior research indicated that learning at work gets a prominent role especially at the very start of the job, when graduates encounter ample new challenges (Nicholson, 1990). Graduates will need to cope with this new working context, which inherently creates numerous learning opportunities. It is expected that most learning occurs during the first encounter stage when graduates experience the largest 'reality shock' (Nicholson, 1990). Nicholson (1990) stated that after this stage; graduates will need some time to adjust to their job. In this adjustment stage, personal change related to work is central,

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which also involves additional learning. After this stage, graduates reach the final stabilisation stage in which they are settled in the job.

Relationship between Fit and Work-Related Learning

Complementing hypothesis. Theoretically, two contradicting processes are suggested regarding the relationship between education-job fit and work-related learning. The idea that learning complements an already existing and appropriate set of competences goes back to human capital theory (Becker, 1964). Within this theory, it is assumed that graduates' human capital is mainly represented by their knowledge and skills acquired within education (Wolbers, 2003). This established human capital enables graduates to further develop their competences and is argued to stimulate the participation in work-related learning activities, providing recent graduates with a *head start*. The complementing hypothesis states that learning begets learning, implying that (only) those employees in a fit condition will engage in work-related learning. Following this perspective, organisations should strive for an optimal education-job fit as these employees will be able to build on their existing competences, which enhances productivity (Brunello, 2004). Although the complementing relationship is put forward theoretically, it has rarely been investigated in the transition to work. Most studies find support for this hypothesis when comparing different educational levels (related to vertical fit): Overall, individuals with a higher education background tend to invest more in training than their lower-educated peers (Brunello, 2004; Verhaest & Omey, 2013). Moreover, prior research found that underemployed employees acquired fewer skills than their peers who experienced fit (Büchel & Mertens, 2004; Verhaest & Omey, 2013). To the best of our knowledge, the complementing hypothesis was not investigated in empirical studies on horizontal fit.

Substituting hypothesis. This hypothesis starts from the premise that work-related learning could replace the educational function. Work-related learning is thus advanced as a way to *fill a gap* between a graduate's educational background and requirements for the job (Heijke et al., 2003).

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This premise is in line with the idea that employees foremost learn when they experience a need to acquire or improve competences to perform in their job (Verhaest & Omey, 2013). Although the substituting hypothesis is a common way of thinking in the case of horizontal misfit, it can also be applied to the case of vertical misfit. Whereas underemployment is largely viewed as a situation in which employees are overqualified for their job, it can still be considered to be a situation of discontinuity between education and jobs, as such (potentially) creating learning needs (Heijke et al., 2003). Following this perspective, it is beneficial for organisations to invest in learning possibilities for employees in a misfit condition, as they will experience a larger need to learn, while they will not experience this need in a fit condition. Again, there is limited empirical research available testing this substituting hypothesis. The study of Heijke et al. (2003) found a positive influence on training participation when the skills obtained in education did not match what is required for the job. Van Smoorenburg and van der Velden (2000) demonstrated that employees in a horizontal misfit situation participated more in formal training. To the best of our knowledge, the substituting hypothesis was not confirmed in empirical studies focusing on vertical fit, which could be attributed to the fact that it is often assumed that underemployment is a beneficial situation for employees (Baert, Cockx, & Verhaest, 2013).

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Present Study

The current study aims to empirically test the contradicting explanations for the relationship between education-job fit and work-related learning of recent graduates. As mentioned before, the mixed findings of previous research could be due to the fact that those studies take a limited perspective on the concept of education-job fit and focus on formal work-related learning, neglecting the prominent role of informal learning. These two gaps will be addressed in this study, by taking different types and measurements of education-job fit into account, and by focusing on both formal and informal learning.

First of all, the focus is on increasing the understanding of how different fit situations are manifested. In contrast to most studies on education-job fit, this study takes both vertical and horizontal fit (and their combination) into account, as it is theoretically argued that the combinations of vertical and horizontal fit can have additional effects (Béduwé & Giret, 2011). Moreover, a subjective measurement of fit is combined with an objective measurement of fit to avoid the overestimation and underestimation of fit that is common when using one measure (Leuven & Oosterbeek, 2011). Hence, this study takes a broad view on the fit situation of recent graduates by including two types of this and two measurements of fit. As such, this study aims to map the fit profiles. As both vertical and horizontal fit are combined, our hypothesis is to find four fit profiles: A profile with both horizontal and vertical fit (1), a profile with horizontal fit, but vertical misfit (2), a profile with horizontal misfit, but vertical fit (3), and a profile with horizontal and vertical misfit (4).

After determining the education-job fit profiles, the study aims to examine the relationship between the different fit profiles and graduates' learning behaviour. The *complementing* and *substituting* hypotheses are tested, assessing the impact of fit on both formal and informal learning (Kyndt & Baert, 2013). Based on the complementing hypothesis, we would expect that most learning takes place when employees experience both vertical and horizontal fit. Based on the substituting hypothesis, we would expect that most learning occurs when employees experience both vertical and horizontal misfit. Although it is theoretically argued that the combination of vertical and horizontal fit can have different effects, prior research has not provided insight in the directions of these specific effects.

As the entrance to a new job implies additional opportunities to learn new things (Grosemans et al., 2017), we will investigate whether (possible) differences are sustained later in the job. As such, the complementing and substituting hypotheses are investigated in the beginning of the new job when graduates are encountering the first challenges, as well as after a period of adjustment to the job (Nicholson, 1990). As learning is central in both the encounter and adjustment

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stage (Nicholson, 1990), it is expected that differences (present in the encounter stage) continue to exist in the adjustment stage. The research questions thus read as follows:

RQ 1. Which education-job fit profiles can be found among recent graduates?

RQ 2a. Do participants in different fit profiles report different learning behaviour?

RQ 2b. Are these differences in learning behaviour sustained six months later into the job?

Method

Procedure and Participants

The data collection focused on recent graduates from different higher education institutions in Flanders (Belgium) as part of a larger research project on the transition to work. The graduates were surveyed in November 2016 (T1), four months after graduation. The total sample consisted of 1459 graduates, of whom 507 engaged in an additional study programme and 158 were looking for employment, in line with the youth unemployment rates in Flanders (Statbel, 2017). This study focuses on the 814 graduates who were working. As only graduates who provided details on the fit measurements were retained, a total of 779 graduates were included in this study. Six months later, participants were asked to complete the survey again (T2). At T2, 518 of the 779 participants completed the questionnaire. To investigate the sustainability of the relationship, only participants who were employed in the same job as indicated at T1 were retained, resulting in a sample size of 398 participants at T2. Background characteristics are presented in Table 1.

[Insert Table 1 about here]

Instruments

Education-job fit. Education-job fit was assessed in four ways, taking vertical and horizontal fit, and subjective and objective fit into account. Concerning *subjective fit*, a direct self-assessment question was selected in line with prior research (Leuven & Oosterbeek, 2011). Vertical subjective fit was examined by using the statement "The required level of my job matches the level of my

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education." Similarly, the statement for horizontal subjective fit was "My job is in line with my study discipline." Both statements were rated on a 7-point Likert scale, ranging from *totally disagree* to *totally agree*.

Objective fit was assessed by means of a job analysis (Leuven & Oosterbeek, 2011). To this end, participants were asked to describe their current occupation, including their most important tasks. Each described occupation was classified based on the International Standard Classification of Occupations (ISCO), using the extensive definitions in the ISCO-08 version (International Labour Office, 2012). For this study, a researcher classified each description in so-called *minor groups,* categorising all occupations in 130 groups. Afterwards, their educational background was classified in accordance with the International Standard Classification of Education (ISCED). Using the ISCED-2011, all graduates who obtained a bachelor's degree were classified as ISCED 6 and all graduates with a master's degree were classified as ISCED 7 (UNESCO Institute for Statistics, 2012). In order to classify their study discipline, the ISCED-2013-F was used, which distinguishes 10 broad fields of study (UNESCO Institute for Statistics, 2014). Finally, the ISCO and ISCED classification codes are combined, resulting in the final objective coding (Wolbers, 2003; International Labour Office, 2012). Although one researcher conducted all classifications, a second researcher classified 10% of the data to check for potential bias. The interrater reliability was satisfactory both for vertical objective fit (κ = .71, p < .001) and horizontal objective fit (κ = .82, p < .001; Landis & Koch, 1977).

Work-related learning. To measure work-related learning the 13-item instrument of Author et al. (2019) was used. This instrument assesses participation in formal learning activities (4 items; attending a seminar), informal learning activities using personal sources (6 items; asking feedback), and informal learning activities using environmental sources (3 items; watching visual material). All items were measured on a 7-point Likert scale, ranging from *never* to *on a daily basis*. The confirmatory factor analysis (N = 779) confirmed the structure of the instrument (CFI = .95, TLI = .94, RMSEA = .06; $\chi^2(df)$ = 220.35(62)). Moreover, the reliability of the scales was satisfactory (formal

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learning: α = .814; informal learning using personal sources: α = .835; informal learning using environmental sources: α = .802).

Analyses

Analyses were performed in two steps. First, latent fit profiles were identified. Second, reported learning behaviour in the different profiles was compared on the two time points.

Identifying different fit profiles. We first explored the descriptive statistics for the incidence of the different measures of fit separately. Afterwards, all four measures of fit were combined using a latent profile analysis (LPA) to determine fit profiles. This analysis allows the detection of the profiles that are present in the data and is able to combine the different measures that were used (Nylund, Asparouhov, & Muthén, 2007). As such, this analysis provides a more nuanced view on the real fit situation of graduates by incorporating multiple types and multiple measures of fit. Different models ranging from one to six profiles were compared using maximum likelihood robust estimation (MLR). Three fit indices guided the decision on the number of profiles: the Vuong-Lo-Mendell-Rubin Likelihood Ratio test (LMR), the Bootstrap Likelihood Ratio test (BLRT), and the Bayesian information criterion (BIC; Nylund et al., 2007). Furthermore, the entropy and the theoretical meaningfulness of the profiles were used to select the optimal model.

Examining work-related learning in the different fit profiles. Differences in work-related learning were examined using the three-step procedure as described by Asparouhov and Muthén (2014). This procedure takes the classification error of the LPA into account when comparing means between the profiles (Asparouhov & Muthén, 2014). Whereas the first step comprised the estimation of the profiles and the indices are saved in a second step, the final step of the procedure includes modelling the means for the outcome variable (i.e., work-related learning) using a multi-indicator approach, in which the latent structure of the concept is used to estimate the mean. This approach has the advantage that it takes the measurement error of the items into account (Hair, Black, Babin, & Anderson, 2009). Simultaneously, differences between these means were compared

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using the Wald chi-square statistic. When the overall statistic was significant, follow-up Wald chi-square tests were conducted to detect which profiles differed. The final research question refers to the stability of the differences in learning behaviour after six months. Consequently, the change of work-related learning from T1 to T2 was examined by means of a latent change score model (LCSM; McArdle & Nesselroade, 2014). The LCSM was modelled in the final step of the three-step procedure, which allows the comparison of differences in the change scores of work-related learning between the estimated profiles. Differences were again compared using the Wald chi-square statistic. All latent analyses were conducted using the Mplus software (version 8.1.5).

Results

Education-Job Fit Profiles

As a first step, the descriptive statistics were explored (see Table 2). Based on objective fit measures, the majority of graduates are employed in a job that is content-wise related to their study discipline in higher education (71.1%). In contrast, only around half of the graduates (50.7%) were classified as being in a job that requires their obtained degree. Concerning subjective fit, the means of vertical and horizontal fit are quite high, indicating that on average, graduates experienced a fit between their educational background and their job.

[Insert Table 2 about here]

Afterwards, the different education-job fit profiles were modelled using a LPA. Based on the BIC and the BLRT, the model fit continued to improve up until six profiles (see Table 3). The LMR, however, indicated that the six-profiles solution was not preferred over the five-profiles solution. Based on the theoretical meaningfulness of the provided profiles the solution with four profiles was identified as the most optimal solution, which was supported by the BIC-value, LMR-test, and BLRT. The entropy of the four-profiles solution equalled .93, demonstrating high classification quality of the profiles.

[Insert Table 3 about here]

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The results for the four profiles are presented in Table 4. Overall, the 90% confidence-intervals indicate large differences between the profiles concerning subjective fit. Although differences can also be found between the profiles concerning objective fit, the latter was less distinguishing than subjective fit, especially for vertical objective fit. Taking a closer look at each profile separately indicates that graduates in the first profile are clearly characterised by high scores on subjective fit for both vertical and horizontal fit. Moreover, graduates in this profile have the highest probability of being objectively classified as having a well-fitting job, both regarding vertical and horizontal fit. Therefore, this first profile is named the *full fit profile.* The second profile is also characterised by a relatively high score on horizontal subjective fit. This is also reflected in the objective measure of horizontal fit, as 70% of the graduates in this profile were classified as having a horizontal objective fit. Their vertical subjective fit is however rather low. Concerning vertical objective fit, these graduates have equal probabilities to be in a fitting or misfitting occupation. As these graduates are mainly characterised by their high horizontal fit both subjectively and objectively, this profile is labelled the *horizontal fit profile*. In contrast to the second profile, the third profile reported a high score on vertical subjective fit and a low score on horizontal subjective fit. However, their probability to be classified in the vertical objective fit category is rather low (34%). Their main distinguishing feature clearly is the high score on vertical subjective fit, being the reason why this profile is referred to as the *vertical fit profile.* Graduates in the final profile indicate low scores on all four of the measures of fit. Consequently, this final profile is labelled the *full misfit profile.*

[Insert Table 4 about here]

Relationship between Fit and Work-Related Learning

As a next step, it was examined whether differences were found in reported work-related learning between these profiles. The latent means of the factors of work-related learning for each profile are shown in Table 5. The Wald chi-square statistic test demonstrated that differences between the profiles were meaningful (Wald $\chi^2(9) = 36.20$; $p < .001$). Follow-up tests indicated

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significant differences for formal learning activities (Wald $\chi^2(3) = 20.35$; $p < .001$) and for informal learning activities using personal sources (Wald $\chi^2(3) = 15.01$; $p < .01$). The Wald-statistic ($df = 3$) equalled 5.57 for informal learning activities using environmental sources, which was not significant ($p > .05$).

For formal learning and informal learning activities using personal sources, it was explored which profiles differed. For formal learning activities, most learning behaviour was reported in the vertical fit profile, which was significantly more than that of graduates in the full misfit profile and in the horizontal fit profile. Moreover, graduates in the full fit profile also indicated significantly more formal learning behaviour than graduates in the full misfit profile. Concerning informal learning activities using personal sources, reported learning behaviour was significantly higher in the full fit profile, compared to the full misfit and the vertical fit profile. Graduates in the horizontal fit profile also participated significantly more in informal learning activities using personal sources than those in the full misfit profile.

The latent change of work-related learning from T1 to T2 was modelled to investigate the sustainability of the differences (RQ 2b). A change factor was estimated for graduates who remained in the same occupation (and, consequently, in the same fit profile; $N = 398$). The average change per profile for the three factors of work-related learning is also presented in Table 5. For none of the four profiles the change factors reached significance, indicating that the average learning behaviour did not change six months later into the job. Hence, the Wald statistic did not indicate significant differences between the profiles (Wald $\chi^2(9) = 4.94$; $p > .05$).

[Insert Table 5 about here]

Discussion

The purpose of this study was to investigate the relationship between education-job fit and work-related learning of recent graduates. Two theoretically contradicting hypotheses on this relationship were assessed: Whereas the complementing hypothesis states that graduates

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experiencing education-job fit will learn more than graduates without education-job fit, the substituting hypothesis states that graduates with education-job fit will learn less than those without fit. This study addressed essential gaps in existing research on the topic by including two types of fit, different measures of fit, and by focusing on formal as well as informal learning activities.

Education-Job Fit Profiles

In contrast to previous studies, this study aimed to grasp the full complexity of the connection between higher education and graduates' jobs (Verbruggen et al., 2015). Results of latent profile analyses indicated that most graduates (74.84%) demonstrated high levels of both vertical and horizontal fit (*full fit* profile). However, at the same time a non-negligible proportion of graduates (5.26%) demonstrated a *full misfit*. Given the importance of a fit between work and education in terms of career success (McKee-Ryan & Harvey, 2011), consequences of misfit may be substantial. Approximately equal proportions of graduates were found in a condition of solely vertical fit (9.37%) or only horizontal fit (10.53%). These findings contribute to existing literature on education-job fit, as it includes fit profiles in the beginning of graduates' careers. Using a profile-based approach adds to other approaches (such as correlation-based analyses), as it provides a nuanced view on the incidences of fit by including two types and two measurements of fit.

When looking more deeply into what distinguishes these different profiles of graduates, they mostly differed in terms of subjective fit (both vertical and horizontal; Harari et al., 2017). Results for objective fit measures seemed to be more ambiguous and 90% confidence-intervals of the mean scores indicated some overlap between the profiles regarding objective fit. The reason for its limited distinguishing character is twofold. On the one hand, objective measures tend to underestimate the incidence of fit, implying that this measurement in itself is probably too conservative (Verhaest & Omey, 2006). On the other hand, the objective measures are coded binary (fit or misfit), whereas the subjective measures were rated on a 7-point Likert scale. As such, it is less apt to provide a nuanced view than the subjective measures. When including this measure in future research, it is

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thus important to combine it with other measures to verify the results. These findings demonstrate that education-job fit should not simply be reduced to *fit or misfit* but that taking different types and different measures of fit into account provides a more nuanced understanding of graduates' reality.

Education-Job Fit and Work-Related Learning

When comparing the identified profiles in terms of learning behaviour, results were in favour of the *complementing* hypotheses, arguing that work-related learning *complements* what is learned during higher education (Brunello, 2004). This indicates that graduates *capitalise on a head start* for learning at work provided by a fit between their educational background and their job. This may be problematic for graduates experiencing full misfit. They were found to participate less in learning activities at work, making them at risk to get stuck in a vicious circle where their inadequate preparation for their current job hampers learning at work while exactly these learning activities may be the key to filling the gap between their educational background and job requirements. The question remains as to what are the reasons for their lower participation: Are organisations creating fewer opportunities for these graduates or are these graduates themselves not taking these opportunities, because they are for example waiting for a job opportunity that fits their educational background? Verbruggen et al. (2015) indicate that graduates with a full misfit are in a less favourable position, as other employers often interpret this full misfit as a negative signal, especially at the beginning of graduates' careers. As in general these graduates are also learning less than graduates in a fitting profile, it implies that is important for both organisations and graduates themselves to invest in work-related learning to enhance their competences for their current job. Hence, these graduates might benefit from getting more support (for example in terms of career guidance) in order to stimulate their learning processes.

This study takes the complementing hypothesis one step further by demonstrating that different types of fit lead to different learning behaviours. Different types of fit were found to differently impact formal and informal learning, demonstrating the value of taking different types of

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fit conjointly into account when identifying latent profiles (Verbruggen et al., 2015). Results for *formal* work-related learning (such as trainings and seminars) demonstrated the importance of *vertical* fit. Given that organisations are generally assumed to have a stronger impact on decisions regarding formal learning while informal learning is more strongly steered by the employee (Kyndt & Baert, 2013), these results suggest that organisations tend to invest more in graduates who are working at their level of education, in line with the presumption in human capital theory (Wolbers, 2003). In contrast, the results demonstrate that *horizontal* fit is key for stimulating *informal* learning using personal sources, such as asking feedback, observing colleagues, and reflecting. Thus, graduates who are more familiar with the domain they are working in made more use of available personal resources. This suggests that when the study domain during higher education is aligned with their job, this domain functions as a necessary foundation to continue to learn at work, indicating that "higher education has a qualifying function for the world of work" (Teichler, 2007, p. 16). As such, the findings suggest that while especially *vertical* fit is influential for fostering participation in *formal* learning, *horizontal* education-job fit matters most for stimulating informal learning activities. When looking at whether these differences were sustained over time, latent change scores demonstrated that reported work-related learning behaviour remained unchanged. The differences between the profiles in work-related learning that existed in the encounter stage remained to exist when most graduates could be expected to be already in the adjustment stage (Nicholson, 1990).

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Limitations and Directions for Future Research

Despite the insights derived from this study and its contributions, it is important to also keep its limitations in mind when interpreting the results. First of all, although education-job fit as conceptualised in this study has proven to be useful to examine the connection between higher education and the job (Grosemans et al., 2017), it also has limitations. As such, it assumes that the group of graduates with the same degree is more or less homogeneous. However, individual-level

differences among graduates are inevitably present as not all graduates with the same degree can be expected to have developed exactly the same competences, given that the development of competences is dependent on multiple personal factors such as socio-economic status, attitude towards learning, or employability (Heijke et al., 2003; Kyndt & Baert, 2013). Hence, it would be interesting for future research to focus on the fit between the developed competences and the required competences for the job. Taking individual-level differences into account could possibly reveal additional differences in work-related learning. This could provide key input for the career guidance and counselling and provide insights for individualised support trajectories, both in finding a job with an appropriate fit and in supporting work-related learning after the transition to work.

Second, as the sample focused on graduates with a higher education background, it is important to note that the results on vertical fit might be different when examining graduates without a higher education degree (Verhaest & Omey, 2006). Whereas no explicit distinction was made between under- and overemployment, graduates with a vertical misfit in the present study are underemployed: In the objective measures of vertical fit higher education is the highest level, implying that overemployment cannot exist for these graduates (UNESCO Institute for Statistics, 2012). It would be interesting to analyse a more diversified sample for vertical fit to gain more insight in the possible differences for graduates who are under- and overemployed.

Third, this study only took the education-fit profile of graduates into account in relation to work-related learning. As such, this study demonstrated the value of the complementing hypothesis, but it does not provide explanations for this relationship. An important aim for future research entails to investigate potential moderators in this relationship. Based on human capital theory, it can be expected that graduates who are motivated to learn will also learn more (Heijke et al., 2003). Including motivation to learn could provide additional insights in individual differences between employees in the same fit profile. Human capital theory also suggests that personal factors, such as basic skill level, are important to learn which is also confirmed in prior research (Becker, 1964; Kyndt & Baert, 2013). Therefore, these personal characteristics can also potentially explain the relationship

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between education-job fit and work-related learning. Moreover, different reasons can be found for accepting a job without fit, mostly related to graduates' career perspectives (Baert et al., 2013). It would be an interesting avenue for future research to investigate whether career goals are explaining the relationship between education-job fit and work-related learning as well.

Finally, this study focused on the first period in the job (encounter and adjustment stage). It would also be interesting to include additional time points in a longitudinal design: Taking a transition perspective, it is known that graduates will need time to stabilise into their job after the adjustment stage (Nicholson, 1990). Consequently, it would be interesting to see how their work-related learning behaviour develops during (the following stages in) their career and whether changes can be detected in this development across employees in different fit profiles.

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Conclusion and Contributions

In conclusion, this study made both theoretical and methodological contributions to research on the relationship between education-job fit and work-related learning. Using different measurements of fit in the latent profile analyses demonstrated that different combinations of vertical and horizontal fit manifest across individuals. This contributes to the understanding of education-job fit as it provides a more nuanced view on the reality of graduates. Another important theoretical contribution of this study results from the juxtaposition of two theoretically opposing hypotheses. This study provided support for the complementing hypothesis, arguing that continued learning at work complements what was learned during higher education. Moreover, this study refined theorising on this relationship by demonstrating how different types of fit combinations differently influence formal and informal learning activities. While the level of education (vertical fit) mattered for formal learning, results indicate that especially horizontal fit was of importance for informal learning activities using personal sources. Moreover, the relationship between education-job fit and work-related learning remained the same when graduates are encountering their first job and when they are adjusting to their job. The present study also contributed on a more practical

level in providing suggestions for organisations. By obtaining a more nuanced understanding of the relationship between education-job fit and work-related learning, it is possible to target the specific groups of graduates that are currently learning less than other groups. As work-related learning is important for all employees, organisations have the possibility to invest in these “at-risk” groups to ensure that all employees will remain future-proof.

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Table 1

Sample Characteristics

	T1 (*N* = 779)	T2 - in the same job (*N* = 398)
Gender		
Male	188 (24.1%)	88 (22.1%)
Female	591 (75.9%)	310 (77.9%)
Age		
Mean	24.57	24.80
Standard Deviation	4.59	5.02
Type of contract		
Permanent	390 (50.1%)	201 (50.5%)
Temporary	388 (49.8%)	196 (49.3%)
No information	1 (0.1%)	1 (0.2%)
Working hours		
Full time	633 (81.3%)	320 (80.4%)
Part time	146 (18.7%)	78 (19.6%)
Sector		
Profit	379 (48.7%)	179 (45.0%)
Non-profit	400 (51.3%)	219 (55.0%)

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Table 2

Descriptive Statistics and Correlations for Education-Job Fit and Work-Related Learning Measures at T1

	1.	2.	3.	4.	5.	6.	7.
1. Vertical objective fit	-						
2. Horizontal objective fit	-.016	-					
3. Vertical subjective fit	.173**	.217**	-				
4. Horizontal subjective fit	.228**	.301**	.590**	-			
5. Formal learning	.077*	.045	.139**	.059	-		
6. Informal learning using personal sources	.069	.049	.129**	.200**	.246**	-	
7. Informal learning using environmental sources	.212**	.054	.081*	.103**	.299**	.403**	-
Incidence	50.7%	71.1%	-	-	-	-	-
Mean	-	-	5.390	5.380	2.404	5.092	4.179
Standard Deviation	-	-	1.475	1.534	1.087	1.122	1.474

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Table 3

Goodness of Fit for Different Models

Number of profiles	AIC	BIC	Entropy	LRT p-value	BLRT p-value
1	7720.523	7748.471	-	-	-
2	7191.456	7242.694	.929	< .001	< .001
3	7088.651	7163.179	.876	.023	< .001
4	6891.840	6989.658	.927	< .001	< .001
5	6803.154	6924.262	.794	.029	< .001
6	6750.082	6894.480	.833	.111	< .001

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Table 4

Results and 90% Confidence-Intervals of the LPA with Four Profiles

	Profile 1	Profile 2	Profile 3	Profile 4
	Full fit	*Horizontal fit*	*Vertical fit*	*Full misfit*
	n = 583	*n* = 82	*n* = 73	*n* = 41
Vertical objective fit	.56	.50	.34	.14
	[.52; .59]	*[.40; .60]*	*[.24; .45]*	*[.02; .25]*
Horizontal objective fit	.77	.70	.52	.23
	[.74; .80]	*[.61; .80]*	*[.42; .63]*	*[0.09; .36]*
Vertical subjective fit	6.01	2.89	5.15	1.97
	[5.95; 6.07]	*[2.68; 3.09]*	*[4.94; 5.36]*	*[1.65; 2.29]*
Horizontal subjective fit	6.02	4.92	2.96	1.72
	[5.96; 6.09]	*[4.62; 5.23]*	*[2.68; 3.25]*	*[1.41; 2.02]*

Note. Subjective fit displays the mean (and 90% confidence-interval) of the profile for the measures on a 7-point Likert scale. Objective fit displays the probability (and 90% confidence-interval) for each profile to be classified in the fit-condition.

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Table 5

Means of Work-Related Learning for Different Education-Job Fit Profiles

		Profile 1 *Full fit*	Profile 2 *Horizontal fit*	Profile 3 *Vertical fit*	Profile 4 *Full misfit*	Wald Statistic					
						Profile 1 vs. 2	Profile 1 vs. 3	Profile 1 vs. 4	Profile 2 vs. 3	Profile 2 vs. 4	Profile 3 vs. 4
T1		*n* = 583	*n* = 82	*n* = 73	*n* = 41						
Formal learning	*M (SE)*	2.54 *(0.06)*	2.31 *(0.13)*	2.74 *(0.17)*	1.96 *(0.14)*	*p* = .094	*p* = .245	*p* < .001	*p* < .05	*p* = .056	*p* < .001
Informal learning personal sources	*M (SE)*	5.58 *(0.05)*	5.53 *(0.12)*	5.28 *(0.11)*	5.02 *(0.18)*	*p* = .652	*p* < .01	*p* < .01	*p* = .122	*p* < .05	*p* = .198
Informal learning environmental sources	*M (SE)*	4.85 *(0.06)*	4.61 *(0.17)*	4.63 *(0.17)*	4.47 *(0.25)*	-	-	-	-	-	-
T2		*n* = 315	*n* = 30	*n* = 39	*n* = 14						
Change - formal learning	*M (SE)*	-0.11 *(0.06)*	-0.12 *(0.45)*	0.25 *(0.35)*	-0.04 *(0.19)*	-	-	-	-	-	-
Change - informal learning personal sources	*M (SE)*	-0.01 *(0.07)*	0.07 *(0.24)*	0.10 *(0.20)*	-0.05 *(0.33)*	-	-	-	-	-	-
Change - informal learning environmental sources	*M (SE)*	-0.07 *(0.10)*	0.53 *(0.66)*	0.25 *(0.42)*	-0.64 *(0.55)*	-	-	-	-	-	-

Note. No differences between profiles were computed for informal learning using environmental sources at T1 and for all variables at T2, as the overall Wald statistic for these variables was not significant.

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