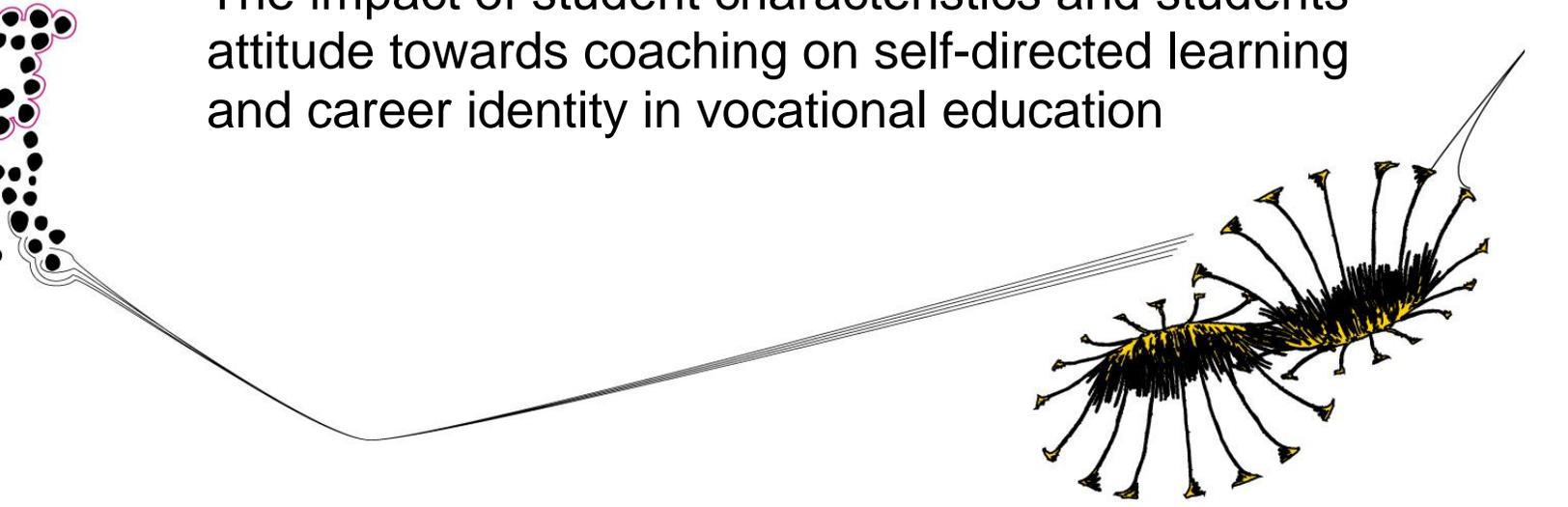




BACHELOR THESIS

The impact of student characteristics and students' attitude towards coaching on self-directed learning and career identity in vocational education

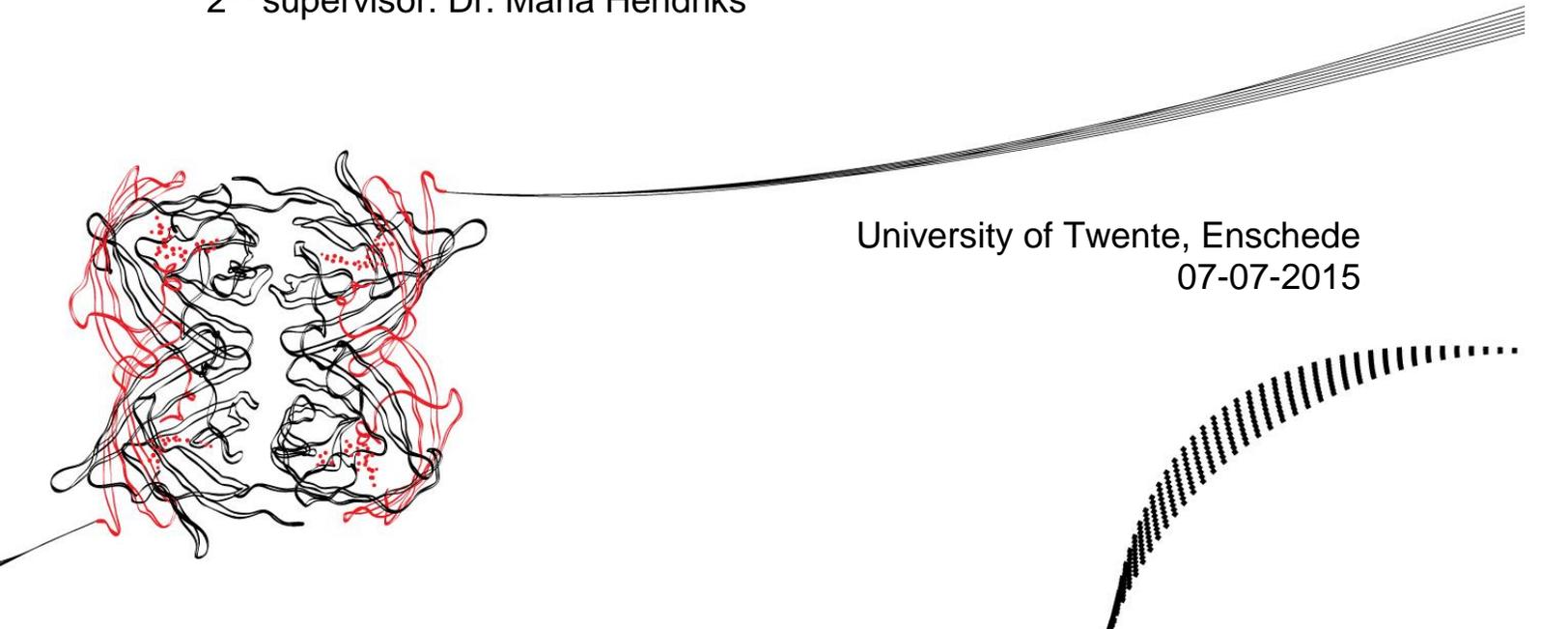


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Abstract

In order to meet the constantly changing demands of the labor market it is important that, already during their vocational education, students learn to direct their own learning and begin to form their career identity. Self-directed learning (SDL) refers to the behavior to independently steer towards your own learning goals. Career identity (CI) is a cognitive concept, and means knowing who you are, which job fits you and knowing if you can be the person you want to be in your future job. To support students to direct their own learning and develop a stronger career identity, nowadays schools for vocational education have set up coaching programs in which teachers are expected to offer students career guidance. In these programs, coaching sessions are an important element. Because almost all teachers are expected to coach students, it is questionable whether every teacher is suitable for this role. In this study, the focus is not only on the impact of coaching sessions on SDL and CI, but also on the influence of the quality of the coach. In particular, the student perspective on coaching is investigated, because students should benefit from the coaching and the coaching should help them to learn more self-directed in career processes and develop a stronger career identity. In addition, it was investigated to what extent student characteristics influenced SDL and CI. There is made a distinction between demographic characteristics and study-related characteristics. Using quantitative data, in this study the relationship between student characteristics and SDL and CI was examined. To discover whether coaching influences this relationship, it was investigated if coaching acted as a mediating factor. This study was based on data collected in the study of Brandenburg (2014), who did research among students from the Dutch vocation educational institute Landstede. From the results it can be concluded that coaching had a positive effect on both self-directed learning in career and forming a career identity, although the influence on self-directed learning in career was larger than the influence on career identity. It also appeared that there was a relation between some student characteristics and SDL and CI. This means that schools should take into account that students are different and therefore may have different needs.

Research description

Rationale¹

As part of European policy, all countries in Europe try to prepare their students for their future career (Descy & Tessaring, 2001). Since 2010 the Dutch government tries to do this by obligating all vocational schools to offer competence-based learning. Competence-based learning is an educational innovation that stimulates the development of career competencies (Jarvis and Keeley, 2003). It also makes students responsible for their own career path by using a more self-directed, student centered approach to learning (Biemans, Nieuwenhuis, Poell, Mulder, & Wesselink, 2004). An important reason why the Ministry of Education, Science and Cultural Affairs started the stimulation of competence-based education, is as a solution to the gap between what is expected from the labor market and what students learn in school (Ministry of Education, Science and Cultural Affairs, 2004). People need to be very flexible and constantly develop themselves to meet the needs of the changing society, while schools are not preparing for this. Therefore schools should pay more attention to self-directed learning in career and the development of the career identity in order to meet the demands of today's society.

The Dutch government concludes that self-directed learning in career is important to get a job and to keep the job. A strong career identity gives a direction and enables that people know what to choose (Onderwijsraad, 2014). Self-directed learning in career means steering your own learning to accomplish career-related goals. Having a strong career identity means knowing what you want in your career and knowing you are capable of doing that.

¹ With thanks to Dr. Ruth van Veelen and Dr. Maria Hendriks for their guidance during this research. The complete study, including all attachments, is available on request from the author.

Coaching should help students to develop these competences. Coaching sessions between the coach and students play a very important role in the coaching process. Meijers and Kuijpers (2007) explain coaching sessions as conversations between the student and his mentor about the effect of different experiences on his life and his professional career. Several researchers (e.g. Kuipers & Meijers, 2009; Meijers, Kuijpers & Bakker, 2006; Mittendorff, Jochems, Meijers & den Brok, 2008) affirmed that this should help students direct their own learning and form a stronger career identity. Whether this is actually achieved, depends to a large extent on the teacher's qualities. In the coaching process, teachers are responsible for ensuring that students are guided in a way that the integral career guidance is implemented as part of everyday educational practice (Meijers et al., 2006). In most schools, all teachers are expected to coach students (Mittendorff, Beijaard, Den Brok, & Koopman, 2012), even if it is unknown if the teachers are able to do that. For this reason this research is focused on the coaching sessions and the quality of the coach, because these are the main components of the coaching.

Although a lot of research has been conducted on, for example content of coaching sessions and teacher perceptions on coaching (e.g. Mittendorff, den Brok, & Beijaard, 2010; Winters et al., 2013), little attention is devoted on how students perceive the coaching and whether it affects the degree of self-directed learning in career and the career identity. It is expected that the view of the students on the quality of coaching and the effectiveness of teachers as coaches impacts on their self-directedness and the development of a career identity.

Not only the students' perception on coaching is important to understand how they develop career competences. Importantly, also student characteristics have to be taken into account. In fact, prior research already indicated that students' self-directedness and career identity can be affected by student characteristics. For example, student characteristics like gender and age appeared to predict self-directed learning in career and career identity (e.g. Kuijpers & Scheerens, 2006; Rowland, 2004; Stringer & Kerpelman, 2010). Besides that, research by Nieuwenhuis (2006) showed that students from technical studies have a weaker career identity compared to other studies, because of the poor learning environment according to career guidance and less attention for development of a career identity. However, a clear overview of the impact of student characteristics on self-directed learning in career and career identity has not been provided thus far. This is needed in order to better adapt education to individual students.

In this study, a distinction is made between demographic characteristics and study-related characteristics. The investigated demographic characteristics are gender, age, living situation and having a side job. The investigated study-related characteristics are study years, learning track (school-based or work-based), the level of study, type of study and doing an internship. According to literature, study-related characteristics, more than demographic background have impact on self-directed learning. For example the year of study and the level of study have shown to affect self-directed learning (Litzinger, Wise & Lee, 2005; Raemdonck, 2005). Career identity is influenced by, for example work experience and gender (Kuijpers & Scheerens, 2006; Stringer & Kerpelman, 2010). Some relations between student characteristics and self-directed learning in career and career identity are studied in the educational context, but others are not. In the next section all characteristics, investigated in this study, and their influence are elaborated further.

In summary, we can conclude that self-directed learning in career and career identity are essential preparing for the ever changing labor market. Therefore, it is important to examine if the coaching, in the way it is designed, has the desired positive effect on SDL and CI. It is particularly interesting to find out whether certain groups of students need more support or have different perceptions in terms of guidance with self-directed learning in career and their career identity. Through this research, there will be a broader understanding of the influence of several student characteristics on self-directed learning in career and career identity and the effects of the currently used form of coaching. This enables schools to guide students better in directing their own learning and form a career identity, by adapting the guidance to the individual needs of the student. For this reason, the question to what extent students' perception on coaching mediates between the relationship between student characteristics and self-directed learning in career in career processes and the career identity of students, is central to this research.

Theoretical framework

In this section, the key concepts from this research are elaborated. Since one of the main goals of coaching in vocational education is guiding students develop a career identity and self-directed learning in career, these concepts are discussed first. The meaning of the concepts is explained and placed in the context. Here is also illustrated what, according to literature, is the influence of student characteristics on self-directed learning in career and career identity. Based on that, hypotheses are drawn about the findings of this study. Finally, the influence of the coaching and the students' perception on coaching are discussed.

Self-directed learning

Knowles (1975) described the career competency 'self-directed learning' as 'a process in which individuals take the initiative, with or without the help of others, to diagnose their learning needs, formulate learning goals, identify resources for learning, select and implement learning strategies, and evaluate learning outcomes' (p.18). There are two types of self-directed learning; self-directed learning in learning and self-directed learning in career processes. The first one refers to achievement of learning objectives. The second one, self-directed learning in career processes, focuses on the preparation for the labor market (Raemdonck, 2006). It means that students achieve career-related goals by undertaking series of career activities. Self-directed learning in learning processes thus refers to directing one's own learning related to achievements during his or her time in school, whereas self-directed learning in career processes refers to directing one's own learning related to aims for the time after school, their future career (Raemdonck, 2006). This study only focused on self-directed learning in career processes, the concrete learning behavior on how to steer one's career plans. Self-directed learning in career processes can be divided in four components; goal setting, choosing strategy, executing the strategy, and monitoring and evaluation (Knowles, 1975).

Although self-directed learning was first only applied in adult education, Knowles (1975) stated that it would also be useful for students. In addition Leith (2002) indicated that when students see themselves as independent people who are responsible for their own future, they are able to direct their own learning. In the last fifteen years the attention for the concept of self-directed learning has enormously increased due to all the changes in education. In the literature, the influence of several student characteristics on SDL is studied. Demographic characteristics have to be taken into account, because they influence many behavioral patterns, including self-directed learning in career processes (Judge, Cable, Boudreau & Bretz., 1995). Some demographic characteristics are investigated before, in comparable or different contexts.

Career identity

Next to self-directed learning, career identity is also very important to be prepared for the current labor market. Where self-directed learning focusses on actions, career identity focusses more on one's feelings and thoughts about one's career. Savickas (2010) states that the career competency 'career identity' is becoming more and more important, because of employers expecting other things from their employees than before. Employees have to be very flexible and intrinsically motivated. Career identity is defined as "a structure or network of meanings in which the individual consciously connects his own motivation, interests and abilities to acceptable work roles" (Meijers, 1995, p. 63). Someone has a strong career identity when he or she can confidently answer the following questions: (1) What kind of person am I? (2) What kind a job fits me? (3) Can I be the person I think I am in the work I aspire? (Kuijpers et al., 2006). On the one hand this is an internal process in which a student must find out what work means in, and for his life (Winters et al., 2008). On the other hand it is an external process, because it is constantly adapted due to conversations with others.

Self-directed learning in career and career identity are strongly related and can strengthen each other. By directing your own learning toward career-related goals, you will develop your career identity (Meijers & Wardekker, 2002). The other way around, having a strong career identity helps to see the meaning of learning and become more self-directed (Winters, Meijers, Kuijpers & Baert, 2009).

Just like self-directed learning in career, forming a career identity can be influenced by student characteristics. Both demographic characteristics and study-related characteristics may affect career identity forming and therefore both types of characteristics will be elaborated in this literature review. In literature,

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the following characteristics are discussed; gender, age, living situation, work experience, study year, study level, learning track (work-based or school-based), doing an internship and the type of study (technical versus non-technical).

Characteristics influencing SDL and CI

We will now discuss the influence of different characteristics on self-directed learning in career in career and career identity. The characteristics are divided in demographic characteristics and study-related characteristics. First the demographic characteristics are elaborated.

Gender

Several studies showed that gender has a significant effect on self-directed learning in career. Specifically, on the one hand it has been shown that women are better entrepreneurs of their own career development (e.g. MacDermid, Lee, Buck & Williams, 2001). On the other hand, men have been shown to be better in planning their career and in networking (Claes & Ruiz-Quintanilla, 1998; Mannheim, Baruch & Tal, 1997). Finally, SDL research in the workplace has shown that gender in itself has no significant effect on the total concept of self-directed learning (Raemdonck, 2006). Women and men score differently on certain components of self-directed learning, but altogether, there appears to be no measurable difference. To date, research findings on gender differences in SDL contradict each other. Therefore, in the current research we have no specific hypothesis about the impact of gender on SDL in career.

Since many studies show that gender is significantly influencing the occupational choice of individuals (e.g. Duffy & Sedlacek, 2007; Jantzer, Stalides, & Rottinghaus, 2009; Jome, Surething, & Taylor, 2005), it seems likely that gender also plays a part in the development of a career identity. Women reflect more often on their capacities than men do (Kuijpers & Scheerens, 2006). Besides that, there is another reason why women may be more cognitively aware of their career relative to men. Despite the fact that we are living in a highly emancipated society, still women, more than men may need to consciously make career a priority for their identities in order to manage obstacles and competing demands in their lives (children, household; Stringer & Kerpelman, 2010). Therefore it can be expected that, in general, female students will have a stronger career identity compared to the male students.

Age

Age is another demographic characteristic that could influence self-directed learning in career. This is researched in both in educational context and at the workplace. Specifically, Long and Agyekum (1983) found that older students were more self-directed in their college work than younger students. Mittendorff, Beijjaard, den Brok, and Koopman (2012) on the other hand, concluded that the student characteristic 'age' had no significant influence on differences in career competency development. However, it should be noted that the average age in the study of Long and Agyekum (1983) was almost 26, while in the study by Mittendorff et al., (2012) it was under 18 with a age range of 15-25 years. Therefore, it could be that, for the career development of students, it does not matter if students are sixteen or nineteen years old (Mittendorff et al., 2012), because the age range between is too small to measure an effect on SDL.

Research that investigated age in relation to self-directed learning in the workplace, revealed that with increasing age, the level of self-directedness decreased among high qualified employees. For low-qualified employees no significant age effect was found (Raemdonck, 2006). Moreover, from other studies at the workplace, it can be concluded that most of the time, self-directedness in career decreases with age (Kuijpers, 2003). In the literature, no clear assumptions are given about the effect of age on self-directed learning in career. Because of the contradicting findings, it is hard to draw a general conclusion. The influence of age on self-directed learning in career, apparently strongly depends on the age range and the context.

To date, the relationship between age and CI has only been investigated indirectly, Specifically, it is very plausible that age also has an positive influence on the career identity, considering that the research of Patton, Bartrum and Creed (2004) demonstrated that older students prepare themselves better for career choices. They are also be more confident about their career (Rowland, 2004). This is supported by the

statements of Kuijpers and Scheerens (2006). They indicate that work exploration is mainly influenced by the age of students. According to this literature, it is expected that older students have a stronger career identity than younger students. Thus, in this study there is expected a positive relation between age and career identity.

Living situation

Students who live on their own have to take care of themselves and cannot always rely on their parents. If they have to organize everything and therefore become more independent, it could be that these students more easily direct their career processes and develop a career identity. In literature there is no direct link to the living situation and self-directed learning in career or career identity forming, but it does suggest that the living situation can influence one's career. The results of the study of Berkhout, Berkhout and Biermans (2006) did show that student who lived with their parents took 15% longer to find a job. Living on your own could indicate a certain degree of independence and in that way explain the relation, but other explanations are also possible (Berkhout, Berkhout, & Biermans, 2006). Though, in this study there is assumed that students who live on their own are more self-directed than the students who still live with their parents or caregivers. There is not expected a direct link to career identity, because career identity is a focusses more on feelings instead of behavior.

Work experience

One of the first things you think of when speaking about characteristics that may affect self-directed learning in career and career identity is having a job. Several studies have investigated the effect of having a job on the development of the career identity. In the study of Stringer and Kerpelman (2010), perceived relevant work experience was not related to career identity evaluation or career decision self-efficacy. This can be caused by the low skill work experience, which makes it less relevant for the future career of students (Hamilton & Hamilton, 2005). On the other hand, Stringer and Kerpelman (2010) concluded that the number of jobs was positively related with career identity evaluation and career decision self-efficacy. This can be seen as career exploration, because in different jobs students can try various job roles. Along with Stringer and Kerpelman (2010), Helwig (2004) suggests that having more work experience leads to stronger development of the career identity by determine what they enjoy in terms of environments, colleagues and managers and activities. According to the literature work experience would therefore contribute to the development of the students' career identity. So the more work experience students have, the stronger their career identity will be. Since there is no research on the influence of work experience on self-directed learning in career, there are no expectations regarding this relation.

Year of study

Besides demographic characteristics it is also important to check if study-related characteristics are related to self-directed learning in career. The first study-related characteristic measured in this research is year of study. According to the findings Mittendorff et al. (2012) 'year of study' has no significant influence on differences in career competency development. Although it is not a very strong predictor, research actually did reveal that self-directed learning in career increases with the year of study (Litzinger et al., 2005). It is not known whether this is due to the fact that the average age of students is higher, when year of study is higher. What is known, is that the year of study is not the most important factor in predicting students' self-directed learning in career and career identity forming. Although it is not expected that year of study is the most influential characteristic, there is a positive relation predicted between self-directedness and year of study.

Level of study

Just like the year of study, the second study-related characteristic 'level of study' is also investigated before. Raemdonck (2005) shows in her research that this influence is limited. There definitely is a correlation, but only in combination with another factor, namely career satisfaction. Within the lower levels self-directed

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learning often takes place, but mainly in the workplace rather than in formal learning situations (Raemdonck, 2005). It is therefore assumed that level of study has a small positive effect on self-directed learning in career.

Learning track

The third study-related characteristic is the learning track. In vocational education, students can choose between two learning tracks, the school-based track and the work-based track. The school track involves a maximum of 80% of the time spent in school, the work track a minimum of 20% of the time spent in school (Ministerie van onderwijs, cultuur en wetenschap, 2014). The remaining time students are doing an internship or are working in a company. For the influence of learning tracks it is expected that students with a work-based learning track have a stronger career identity due to the greater amount of work experience. This is also confirmed by the fact that students who follow the work-based track seem to be more concerned about career forming than students who followed the school-based track (Meijers et al., 2006; Meijers & Kuijpers, 2007). The study of Mittendorff et al. (2012) also showed that the study track influences the degree students reflect on their career. Student who follow a work-based track reflect more on their career than students who follow a school-based track.

Internship

The fourth study-related characteristic is internship. Meijers, Kuijpers & Grundy (2013) state that making career decisions becomes easier when you know how the world of work is organized. This means for students it is very useful to do an internship. Students use more career competencies when they are stimulated by real-life experiences with work and have conversations about the experiences (Kuijpers, Meijers & Grundy, 2011; Kuipers & Meijers, 2009; Geurts, 2006). Meijers et al. (2013) state that the dialogues with their teacher and professionals in workplace are crucial and that the more experiences students have, the more relevant the dialogues are. Therefore there is expected a positive relation between doing an internship and the score on career identity.

Type of study

The last study-related characteristic is type of study. Mittendorff et al. (2012) state that the type of study has no significant influence on the differences in career competency development. Despite this conclusion, Nieuwenhuis (2006) assumes that students from technical studies have a weaker career identity compared to other studies. He explains that it is caused by the poor learning environment according to career guidance and less attention for development of a career identity. There is little known about the influence of the type of study and there is no consensus. Because of the claims of Nieuwenhuis (2006) there will be investigated if students from technical studies indeed have a weaker career identity.

As we can see, students vary in many ways and this can affect SDL and CI. Because self-directed learning in career and career identity are so important, coaching programs are implemented to stimulate students to improve these competencies. In this manner, all students should be prepared for the labor market.

Coaching

In the coaching programs that schools have set up in recent years, teachers are expected to provide career guidance for the students (Mittendorff, Jochems, Meijers, & den Brok, 2008). These coaching programs contain instruments and activities for students and teachers such as personal development plans and coaching sessions (Meijers, 2008). Teachers are responsible for ensuring that students are guided in a way that the integral career guidance is implemented as part of everyday educational practice (Meijers et al., 2006). In the ideal situation career guidance will enhance self-knowledge and self-awareness, educational and occupational exploration, and decision making and career planning (Meijers et al., 2006). To check if coaching indeed has a positive influence and therefore contributes to more self-directed learning in career and a stronger career identity, coaching is studied in this research.

Coaching sessions

One of the most important aspects of coaching is having coaching sessions. Meijers and Kuijpers (2007) explain a career dialog as a conversation between the student and his coach about the effect of different experiences on his life and his professional career. This is to relate experiences from the professional world to the development of the student and his career identity. In the study of Meijers and Kuijpers (2007), the coach was a dean or career counselor. Although in the new form of coaching teachers are expected to coach the students, the coaching sessions remain important. Mittendorff et al. (2008), who did research in schools where teachers had the role of coach, state that individual coaching sessions between the student and coach are necessary to make students actively reflect on their own learning and form an opinion about their future career.

Often coaching sessions are mandatory and already planned in the curriculum of the students. Students get their own coach to guide the process. In this way a coach can build a relationship with the student and is he able to give personal guidance. This should be easy to realize if a teacher pays enough time and effort to actually help the student to develop his career identity (Meijers et al., 2013). The problem is that during conversations with students, most teachers only focus on school issues instead of career issues (Mittendorff et al., 2010). Indeed, Mittendorff et al. (2010), Kuijpers and Meijers (2009) and Winters et al. (2009) too have shown that teachers have difficulties talking about future jobs and other career related topics. The career guidance only focusses on the competence reflection (Kuijpers & Meijers, 2009). Yet to make coaching sessions useful for students, they should discuss the way students direct their learning and how they develop their career identity (Geurts, 2006). Hence, this study proves if coaching sessions contribute positively to the self-directedness and career identity of students in vocational education.

Research among students (e.g. Meijers et al., 2013; Masdonati, Massoudi & Rossier's, 2009) showed that the content of the coaching sessions did have a positive effect on learning career outcomes. These coaching sessions should not only be oriented on cognitive skills but also on emotions (Masdonati et al., 2009). This contributes to an agreement between the coach and the student about the goals, how the goals should be reached and in this way they will develop a personal connection (Meijer et al., 2013).

Quality of the coach

As stated above, teachers are essential in guiding the students. In literature many recommendations are done. This means that it is taken for granted that teachers coach students in this way and that the qualities of the teachers are equal. Mittendorff, den Brok and Beijaard (2011) and Mittendorff et al. (2012) found that the different career guidance styles of vocational education teachers have little influence on the career competencies compared to student characteristics related to for example personality, but they state that some teacher profiles can be positively related to career reflection of students. The personal teacher profile is related to the highest scores on the career competencies (Mittendorff et al., 2012). This means that a good coach uses a more personalized approach and in this way stimulate the self-directedness and career identity of students.

The role of the teacher is often discussed. All kinds of professionals, like teachers and managers, are engaged in career guidance. Most of them have not followed a specific training of study for this profession. Just like in the Netherlands, in many countries guiding students is no profession but a role (OECD, 2004). If teachers get training it is no more than a few days. Based on the idea that career guidance should be integrated in the daily practice of education, nearly always all teachers are involved (Luken, 2009). Luken (2009) concludes that if there is a selection, it is seldom clear what the selection criteria and measurement of those criteria are. The question remains who is most suitable to coach students, because there is also empirical arguments that plead for entrusting career guidance to external independent specialists (Luken, 2009). Because there is supposed a difference in the quality of the coaches, this is investigated in this study. There is expected a positive relation between the perception on quality of the coach and the score on self-directed learning in career and career identity.

Student perspective

Now it is clear how important it is to adapt coaching to the individual needs of the students, it sounds logical to take the perception of the student into account. What a student will learn largely depends on the way students perceive their teachers and their learning environment (Shuell, 1996). The expectations depend on the needs and beliefs of a student and therefore, are different for each student (Lim & Patton, 2006). There is limited research on career development and coaching comparing expectations of students and coaches (Howieson & Semple, 2000). Besides that, the outcomes of research that has been done is inconsistent. Anderson and Niles (2000), for example, found that coaches and students to a large extent agreed about the events in career guidance. However, most studies as the study of Millar and Brotherton (2001) showed great differences between students and coaches. In these studies coaches are more positive with respect to the facilitation of guidance than students are. Given the fact that there are only a few studies that focused on the perception of students, it is essential that in this study the perception of the student does not remain underexposed. Especially since it appears that the perception of the student has a major impact and is not always consistent with the perception of the coach.

Research model

Research question

The following questions were central to this research;

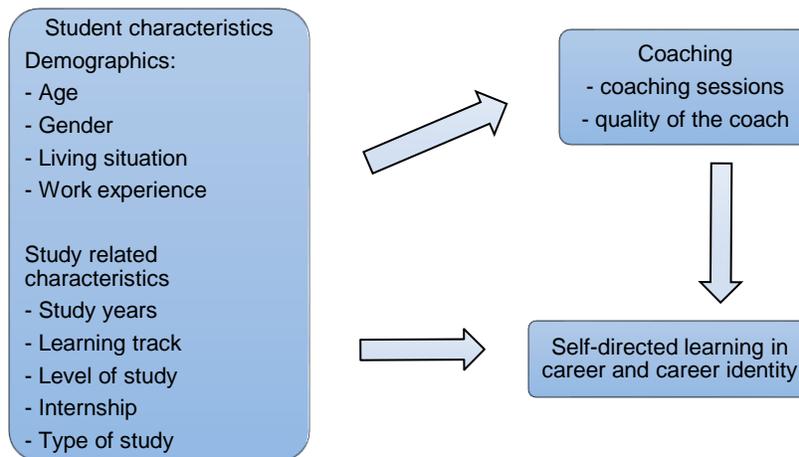
1. To what extent do students' perceptions on the quality of coaching contribute to self-directed learning in career and career identity forming of students in vocational education?
 - a. To what extent do students' perception on coaching sessions influence self-directed learning in career and career identity forming of students?
 - b. To what extent do students' perceptions on the quality of the teacher as coach influence self-directed learning in career and career identity forming?
2. Which student characteristics influence self-directed learning in career and career identity forming and to what extent?
 - a. What is the influence of demographic student characteristics (i.e. gender, age, living situation and work experience)?
 - b. What is the influence of study related characteristics (i.e., study years, study level, learning track, internship and type of study)?
3. To what extent do student characteristics influence the way students perceive coaching?

These questions together lead to a research model to answer to the overarching research question;

To what extent does coaching mediate the relationship between student characteristics and self-directed learning in career and the career identity of students in vocational education at Landstede?

The following model, presented in Figure 1, gives an overview of the main concepts and the investigated relations between these concepts.

Figure 1
Research model



Research design

The study design was a cross-sectional correlational study based on quantitative data. The reason for the use of a cross-sectional research design was that in this field a lot of research focused on qualitative measurement to discover the important elements in coaching to support self-directed learning in career and career identity forming. These descriptive studies give insight to the meaning of coaching and self-directed learning in career, yet conclusions are based on a small group of respondents and relatively little can be said about the relationships between concepts. This study was therefore focusing on underlying relations between coaching and career development by investigating the effectiveness of coaching for different types of students in vocational education.

Respondents

The respondents of this study were students from the Dutch vocation educational institute Landstede. All who followed secondary vocational education were invited to participate in the study regardless of gender, age, study and other personal characteristics. Student who did not follow secondary education within Landstede were excluded. The 9817 students who met these requirements were invited to fill in the questionnaire. In total 2726 students completed the questionnaire, resulting in a response rate of 27.8%. This is in line with expectations and the number of respondents is high enough for the desirable reliability compared to the amount of students in the total population. Answers were coded as missing values if they could not be classified within the categories or if respondents filled in that they did not know the answer.

To give an overview of the different student characteristics that were analyzed, first descriptive statistics were explored. In this study 35.5% was man and 64.5% was woman. From all students, 28.9 % was 20 or older, the rest (71.1%) was between 12 and 19 years old. Almost all students still lived with their parents or caretakers (83.1%) and the 15.5% lived independently. For 1.4%, it was not clear whether they lived independently or not. From all students, 81.7% had a side job or had a side job in the past, the rest (18.3%) never had a side job. The study-related student characteristics were also explored. It appeared that most students (82.2%) did not do a technical study, 14.7% had a technical study and 3.0% of the students could not be categorized. Most students were in the first (48.5%) or second year (32.3%) of their study. Only 13.5% of the students was in his or her third year and 3.7% in the fourth year. The rest (1.9%) was coded as missing, because it was not exactly known in which year they were. More than half of the students (58.2%) followed a study at the highest level (level 4) of vocational education, 3.0% on level 1, 14.3% on level 2 and 24.4% on level 3. Almost all students (87.6%) followed the school-based learning track and 11.8% followed a work-based learning track. A few answers (0.6%) were coded as missing, because students answered that they did not know the answer. Last, 84.4% of the students followed an internship or were following an internship, against 15.6% who did not follow an internship.

Instruments

The instrument was an online survey. The cross-sectional online survey was distributed with NetQ. Students could open the survey with a hyperlink in the email they received.

Student characteristics

Background characteristics were divided into two categories; personal characteristics and study related characteristics. There were four questions about personal characteristics; work experience (yes or no), age (under 20 versus 20 or above), living situation (dependent or independent) and gender (man or woman). An example of an item about personal characteristics is; *'Do you have a side job?'* The student characteristics were measured with six study related questions; study type (technical or non-technical), number of years that students have studied already, learning track (school-based or work-based), the level of study and internship (followed earlier/following now or did not follow one). An example of an item about study related characteristics is; *'Are you doing an internship or have you already done an internship?'*

Coaching

The variable coaching contained three items about group sessions. An example of an item about the group sessions is; *'What do you think of the coaching meetings in your coaching group? – Through the coaching meetings I get to know myself better.* There were also four questions about the individual coaching sessions. For example; *'Does individual coaching help you? – The individual conversations with my coach make that I am motivated for my study'.* Besides questions about the content and perceived value of the coaching sessions, the survey also contained nine questions about perceived the skills of the coach. For instance the following question; *'What do you think of the skills of your coach? - If I need my coach, he/she makes enough time for me'.* All items about coaching were measured with a likert-scale from 'totally disagree' (1) to 'totally agree' (5). The respondents could also choose for 'I do not know' if they cannot answer the question.

A factor analysis was conducted to identify the underlying structure among the coaching variables and to examine the construct validity (Field, 2009). All 16 items on student perceptions of coaching sessions, including four items about individual sessions, three items about group sessions and nine items about the skills of the coach were entered together in a first factor analysis. The factor structure was investigated by a principal component analysis with oblique rotation (direct oblimin), because the items were allowed to be related to each-other. A two-factor solution explained 57.39% of the variance. All seven items about the coaching sessions proved to be one scale, so there was no distinction between individual sessions and group sessions. The factor loadings were between .55 and .81 and explained 44.14% of the variance. The nine items about the skills of the coach proved to be the other factor. The factor loadings were between .54 and .80 and explained 13.25% of the variance. Further, reliability analyses (Cronbach's alpha, α) were used to investigate the reliability of the constructed scales. Values around .8 are good (Field, 2009). If items have a low α , they are deleted and the reliability analysis is repeated. Reliability analysis showed that coaching sessions, quality of the coach, both had high reliabilities, respectively Cronbach's $\alpha = .86$ and $.90$.

Self-directed learning in career

The questions about self-directed learning in career were based on the instrument of Raemdonck (2006) to measure self-directedness in career. The online survey included 14 items about self-directed learning in career. Two items were extensively adjusted from the original scale; as the scale by Raemdonck (2006) focused on respondents already active on the labor market, these two items were not applicable to students. The other 12 items were applicable and merely adjusted to the context and translated to Dutch. This item gives an impression of the type of questions asked in relation to self-directed learning; *'I think it is important to think about what I want to achieve in my future work the next few years.'* All items about coaching were measured with a likert-scale from 'totally disagree' (1) to 'totally agree' (5). The respondents could also choose for 'I do not know' if they cannot answer the question.

Career identity

The last concept career identity was measured with five items. The following example gives insight in de kind of questions that are included in the survey; *'I am sure that the profession for which I learn, suits me'*. Like the previous concepts, career identity measured using a five point Likert scale from 'totally disagree' (1) to 'totally agree' (5). The respondents could also choose for 'I do not know' if they cannot answer the question.²

With a factor analysis was checked if career identity and self-directed learning in career were two different constructs. Again the factor structure was investigated by a principal component analysis with oblique rotation (direct oblimin), because it was assumed that the variables could be related to each other. Two factors were retained, together explaining 52.5% of the variance. All five items on career identity appeared to form a scale. From the 14 items on self-directed learning in career, the item 'I know where I want to go in my career' turned out to measure career identity and was therefore added to the career identity scale. After adding this item to the career identity scale, a loading between .61 and .84 was found, explaining 13.9% of the variance of de self-directed learning in career scale. The item 'I know where I can find information about the type of work I want to do,' that was counted among self-directed learning in career scored poorly and was excluded from further analyzes. After excluding this item, a loading between .62 and .76 was found, explaining 38.6% of the variance of de self-directed learning in career scale. The self-directed learning in career scale and the career identity scale both had high reliabilities. Further, reliability analyses (Cronbach's alpha, α) were used to investigate the reliability of the constructed scales. The Cronbach's alpha was .90 for self-directed learning in career and .84 for career identity. The distribution of the scales career identity and self-directed learning in career proved to be normal, because the skewness and the kurtosis of the variables were between +2 and -2 (Kline, 2005).

Procedure

This study was carried out with existing data, which was gathered in research on the impact of coaching on self-directed learning in career and career identity within Landstede (Brandenburg, 2014). The data were collected with an online survey among student of vocational schools that are part of Landstede. The survey contained informed consent. This means that all respondents were informed about the goals and method of the survey, the estimated time to complete it, and guaranteed anonymity and privacy of participants at the beginning of the survey.

Before the survey started, the managers Career guidance and Learning discussed the goals, procedure and got instructions on how the survey should be filled in. After that the team leaders have spread the information among all teachers of Landstede. Teachers received an e-mail with the link to the online survey. They explained the meaning and procedures of the survey to the students in classroom.

Teachers sent the email with the hyperlink to the survey to the students. Students got the opportunity to fill in the survey during their lessons, but were also allowed to fill it in later. The students who did not fill in the survey also got a reminder after two weeks. This to increase the response rate. Another way to increase the response rate was raffling Ipads and a diner voucher.

The conditions about informed consent had to be accepted to get access to the questionnaire. On average, it took students about 35 minutes to complete the questionnaire. The quality of the instrument and the procedures were guaranteed by the Ethics Commission of University of Twente, which indicated that the study is executed according to the rules and norms of University of Twente.

² Apart from the questions mentioned in this proposal, the survey contained several other questions (open ended, focussing on different career guidance and learning instruments). These questions were not included, because they were not relevant for this study's purposes. Items about tools for guidance such as portfolio and the personal development plan were also excluded.

Data analysis

The data were analyzed with the program SPSS Statistics 22. After conducting the factor analyses and reliability analyses, the data were checked on multicollinearity. To check if the level of multicollinearity is not too high, Bivariate Pearson’s correlations, variance inflation factors (VIF) and tolerance statistics were determined. The correlation matrix of the predictor variables showed that they do not correlate above .80. In the regression analyses for both self-directed learning in career and career identity the VIF was close to one and none of the tolerance statistics were below 0.2 According the methods mentioned above, it can be concluded that there is no multicollinearity (Bowerman & O’Connell, 1990; Menard, 1995).

After ensuring the validity and reliability of selected variables, relationships between these variables were inspected. To find out if there was a link between the independent and dependent variables, the correlations between the variables were calculated first. After that, the regression analyses were conducted.

Results

The categorical variables gender, living situation, side job, study type, learning track and internship were recoded into dummy variables. In Table 1 the codings are displayed. When a response option could not be divided to one of the categories, or respondents selected 'I do not know', this was marked as a missing value. These data were therefore not included in the analyses.

Table 1
The meaning of dummy variables

Variable	Dummy variable 0	Dummy variable 1
Gender	Man	Woman
Living situation	With parents or caregivers	On your own / independent
Side job	No	Yes
Type of study	Not technical	Technical
Learning track	School-based	Work-based
Internship	No	Yes

Correlations

Pearson’s Bivariate Correlation was used to explore the relationship between the variables. The results are presented in Table 2 on the next page. A correlation ≥ 0.1 is a small effect, a correlation ≥ 0.3 is a medium effect, and a correlation ≥ 0.5 is large effect (Cohen, 1988; 1992). Only correlations with effect size greater than .1 are discussed.

As shown in Table 2, there was a small to medium significant positive correlation between students’ perceptions on coaching (i.e., sessions and quality of the coach) and the dependent variables self-directed learning in career and career identity. This is in line with our expectations. Moreover, there were small, positively significant correlations between the predictor variables gender and living situation, and the dependent variables self-directed learning in career and career identity. For both SDL and CI, woman scored higher than men ($p < .01$), and students who live on their own scored higher than those living at home ($p < .01$). Although there was expected a positive effect on both SDL and CI, age correlated positively ($p < .01$) with CI, but not with SDL. Also, surprisingly, those who had a side job scored lower on career identity compared to those with no side job ($p < .01$). The study-related characteristics study year and study level were both significantly positively correlated ($p < .01$) with self-directed learning in career and. As predicted, the higher the study year and study level, the higher the score on SDL. Study year also correlated positively ($p < .05$) with career identity. There was also a positive correlation ($p < .01$) between doing an internship and SDL; doing an internship (relative to no experience with internships) enhanced SDL. Further, students who followed a work-based learning track appeared to have a stronger career identity than students who followed a school-based learning track ($p < .01$). In further analyses, we only included those predictor variables that significantly correlated with SDL, CI and coaching perceptions.

Table 2
 Mean, standard deviation and Person's bivariate correlation between research variables

	Mean	SD	Gender	LS	SJ	Age	ST	LT	SY	SL	I	CS	QC	CI	SDL
Gender ^a	.64	.48	1												
Living situation ^b (LS)	.16	.36	.092**	1											
Side job (SJ) ^c	.82	.39	-.006	-.360**	1										
Age	19.83	5.92	.074**	.632**	-.386**	1									
Study type (ST) ^d	.15	.36	-.351**	-.120**	.018	-.110**	1								
Learning track (LT) ^e	.14	.39	-.028	.390**	-.308**	.388**	.042*	1							
Study year (SY)	1.79	.84	.013	.092**	.000	.213**	.034	.101**	1						
Study level (SL)	3.38	.84	.004	-.041	.174**	.021	-.043*	-.029	.217**	1					
Internship (I) ^f	.84	.36	.057**	.023	.042*	.013	.019	-.039*	.225**	-.081**	1				
CS	3.13	.74	-.059**	.039*	-.017	.066**	.019	-.033	.028	-.072**	.094**	1			
QC	3.94	.75	-.030	.022	.015	.045*	-.002	-.030	.077**	.086**	.049*	.541**	1		
CI	3.51	.78	.075**	.154**	-.086**	.196**	-.031	.122**	.038*	.033	.050**	.207**	.187**	1	
SDL	3.65	.58	.047*	.054**	.010	.036	.003	.003	.088**	.060**	.064**	.318**	.279**	.398**	1

** . Correlation is significant at the 0.01 level (2-tailed).

* . Correlation is significant at the 0.05 level (2-tailed).

LS = Living situation SJ = Side job ST = Type of study (technical) LT = Learning track SY = study year SL = study level I = internship
 CS = coaching sessions QC = quality coach CI = Career identity SDL = Self-directed learning in career

^a 0 = man, 1 = woman; ^b 0 = with parents/ caretakers, 1 = on your own/ independent; ^c 0 = no, 1 = yes; ^d 0 = non-technical, 1 = technical; ^e 0 = school-based, 1 = work-based; ^f 0 = no, 1 = yes

Multiple regression analyses

Based on the correlational analyses, we further investigated the influence of gender and living situation, study year, study level and internship on self-directed learning in career. For career identity, the impact of gender, living situation, side job, age, learning track, study year and internship was investigated. Subsequently we investigated whether students' perceptions on coaching sessions and the coach mediated the relationship between student characteristics and SDL and CI, following the three-step method by Baron and Kenny (1986). If student characteristics significantly impact on both the DV's (i.e., SDL and CI) and the mediator (i.e., coaching), the first two conditions to explain the mediation model are met (Baron & Kenny, 1986). The third condition is that perceptions on coaching should have a significant effect on self-directed learning in career and career identity. The fourth and last condition to test for mediation is that the residual impact of the independent variables must decrease and preferably disappear when the mediator is included in the analysis. Below the four-step process is described.

Step 1: Student characteristics (demographics & study related) on SDL and CI

The first multiple regression analysis was conducted to develop a model for predicting self-directed learning in career from the demographic characteristics (gender; living situation) and the study-related characteristics (study level study year; doing internship). In all conducted analyses it is decided to first add the demographic characteristics in the model and then the study-related characteristics, since demographic characteristics, in contrast to study-related characteristics, are unchangeable. In line with the expectations, results showed that students who lived on their own were more self-directed than students who still lived with their parents. Gender no longer impacted on SDL. This model accounted for 0.4% of the variance of self-directed learning in career $F(1,2635) = 5.360$, $p < .005$. Second the study-related characteristics study year, study level and internship were added. As expected from literature, it appeared that students who were further in their studies and students who studied on a higher level scored higher on SDL. While no specific hypothesis was generated, doing an internship also had a positive effect on SDL. The model for all student characteristics together accounted for 1.6% of the variance of self-directed learning in career $F(3,2632) = 10.217$, $p < .001$. The results of this analysis are shown in Table 3.

The same procedure was followed for career identity. First the demographic student characteristics were inserted in the model. As assumed, gender and age had significant positive effects ($p < .05$) in the model. This means that female students (relative to male students) and older students had a stronger career identity. The model accounted for 4.2% of the variance of career identity. Second the study-related characteristics were added. Learning track and internship had a significantly positive effect ($p < .05$) in the model. This means that also students who followed a work-based learning track and student that were doing or did an internship had a stronger career identity. This was in line with the expectations. The model for all student characteristics together accounted for 5.4% of the variance of career identity (see Table 3).

Table 3
Coefficients of the relation between student characteristics and SDL and CI

	Self-directed learning in career				Career identity			
	B	B	SE B	t	B	B	SE B	t
1 Gender ^a	.045	.037	.024	1.911	.091*	.056*	.031	2.897
Living situation ^b	.078*	.048*	.031	2.470	.076	.035	.054	1.413
Side job ^c					.010	.005	.043	.229
Age					.023**	.169**	.003	6.684
2 Gender	.044	.036	.024	1.867	.091*	.056*	.031	2.915
Living situation	.071*	.044*	.031	2.254	.049	.023	.054	.904
Side job					.056	.028	.044	1.291
Age					.017**	.129**	.004	4.812
Learning track ^d					.288**	.120**	.055	5.279
Study year	.042**	.061**	.014	2.713	-.014**	-.015	.019	-.730
Study level	.038**	.055**	.014	2.683				
Internship ^e	.079*	.050*	.032	2.193	.110*	.052*	.042	2.631

Note. Self-directed learning in career: $R^2 = .004$ for Step 1; Note. $\Delta R^2 = .012$ for Step 2 ($ps < .001$) Career identity: $R^2 = .042$ for Step 1; Note. $\Delta R^2 = .012$ for Step 2 ($ps < .001$)

^a 0 = man, 1 = woman; ^b 0 = with parents/ caretakers, 1 = on your own/ independent; ^c 0 = no, 1 = yes; ^d 0 = school-based, 1 = work-based; ^e 0 = no, 1 = yes

Step 2: Student characteristics (demographics & study related) on coaching

In the second step, the effect of student characteristics (IV) on coaching (M; perception of sessions and quality of the coach) was tested. Based on the correlational analyses, there was only focused on the student characteristics that showed a significant relation with one or both of the coaching variables. In this way, a parsimonious model can be created. First, it appeared that gender and age influenced the perception on coaching sessions. Male students appeared to be more positive about the coaching sessions, and so did older students. This model accounted for 0.8% of the variance of coaching sessions $F(3,2683) = 7.077, p < .001$. Second the study-related characteristics were added. Similar to previous results on SDL, the higher the study year and study level the more positive the perception of the students on the coaching sessions. Doing an internship also positively influenced the perception on the coaching sessions. The model accounted for 1.4% of the variance of coaching sessions $F(2,2681) = 18.815, p < .001$ (see Table 4).

For the quality of the coach, multiple regression analysis showed that older students also appeared to be more positive about the quality of the coach. The model accounted for 0.1% of the variance of quality of the coach $F(1,2671) = 3.384$. Second, the study-related characteristics were added. Just like coaching sessions, the quality of the coach was positively influenced by study level and internship. Together the student characteristics explained 1.3% of the variance $F(3,2668) = 10.851, p < .001$. It can be concluded that study-related characters had a stronger influence on students' perceptions on coaching than demographic characteristics and that the influence of student characteristics is almost the same for the perception on coaching sessions and the quality of the coach.

Table 4

Coefficients of the relation between student characteristics and the coaching variables

	Coaching sessions				Quality of the coach			
	B	<i>B</i>	SE B	<i>t</i>	B	β	SE B	<i>t</i>
1 Gender ^a	-.100*	-.065*	.030	-3.358				
Living situation ^b	.013	.006	.050	.261				
Age	.008*	.061*	.003	2.468	.005	.036	.002	1.840
2 Gender	-.107**	-.070**	.030	-3.617				
Living situation	-.001	.000	.050	-.020				
Age	.008*	.065*	.003	2.648	.003	.026	.003	1.302
Study year					.041*	.046*	.019	2.193
Study level	-.057*	-.064*	.017	-3.341	.069**	.078**	.018	3.880
Internship ^f	.190**	.093**	.039	4.855	.090*	.044*	.041	2.205

Note. Coaching sessions: $R^2 = .008$ for Step 1; Note. $\Delta R^2 = .014$ for Step 2 ($ps < .001$)

Quality of the coach: $R^2 = .001$ for Step 1; Note. $\Delta R^2 = .012$ for Step 2 ($ps < .001$)

^a 0 = man, 1 = woman; ^b 0 = with parents/ caretakers, 1 = on your own/ independent; ^f 0 = no, 1 = yes

Step 3: Coaching on self-directed learning in career and career identity

In the third step, the influence of the coaching variables on SDL and CI was investigated. The more positive the perception on coaching sessions and the quality of the coach, the higher students' level of SDL. This model was statistically significant, $F(2,2722) = 180.464$, $p < .001$ and accounted for 11.7% of the variance of self-directed learning in career.

Secondly, the effect of coaching on career identity was tested. It appeared that coaching sessions and the quality of the coach had a positive influence on career identity, although this was less than on self-directed learning in career. The model was statistically significant, $F(2,2722) = 73.136$, $p < .001$ and accounted for 5.1%. The results of the analyses is shown in Table 5.

Table 5

Coefficients of the relation between the coaching variables and SDL and CI

	Self-directed learning in career				Career identity			
	B	<i>B</i>	SE B	<i>T</i>	B	β	SE B	<i>T</i>
CS	.186**	.236**	.017	11.013	.159**	.150**	.023	6.756
QC	.118**	.151**	.017	7.057	.111**	.106**	.023	4.779

Note. CS = Coaching sessions; QC = Quality of the coach

Step 4: Mediating effects for self-directed learning in career and career identity

In the fourth step, the final mediation model for self-directed learning in career was tested. Only student characteristics that were significantly related to coaching in prior analyses were included. First the demographic characteristics gender and age appeared to account for 0.3% of the variance. Second study-related characteristics study level and doing an internship were added and accounted for 1.0% of the variance. Last, the coaching variables were added to the model. The total model accounted for 12.5% of the variance of self-directed learning in career.

After this analysis, the effect on career identity was tested. Also for career identity, only characteristics that were significantly related to coaching were involved in the model. First the demographic student characteristic age was entered in the model. This model accounted for 4.2% of the variance of career

identity. Second the study-related characteristics study level and doing an internship were added and together they accounted for 4.5% of the variance of career identity. Last, the coaching variables were added to the model. The total model accounted for 9.1% of the variance of career identity. The results are shown in Table 6.

Table 6
Coefficients of a multiple regression analysis with all relevant variables

	Self-directed learning in career				Career identity			
	B	B	SE B	t	B	β	SE B	t
1 G ^a	.054*	.045*	.023	2.334	.098*	.060*	.031	3.206
Age	.003	.033	.002	1.710	.025**	.192**	.002	10.195
2 G	.050*	.041*	.023	2.133	.094*	.058*	.031	3.059
Age	.003	.031	.002	1.613	.025**	.191**	.002	10.146
SL	.045*	.065*	.013	3.395	.030	.033	.017	1.738
I	.106*	.066*	.031	3.470	.101*	.047*	.041	2.484
3 G	.077**	.063**	.022	3.494	.116**	.071**	.030	3.875
Age	.001	.007	.002	.390	.023**	.176**	.002	9.561
SL	.048**	.069**	.013	3.773	.031	.034	.017	1.806
I	.057*	.036*	.029	1.982	.060	.028	.040	1.499
CS	.195**	.247**	.017	11.428	.156**	.147**	.023	6.658
QC	.108**	.139**	.017	6.440	.102**	.098**	.023	4.441

Note. Self-directed learning in career: $R^2 = .004$ for Step 1; $\Delta R^2 = .010$ for Step 2; $\Delta R^2 = .112$ for Step 3 ($ps < .001$) Career identity: $R^2 = .042$ for Step 1; $\Delta R^2 = .003$ for Step 2; $\Delta R^2 = .046$ for Step 3 ($ps < .001$)

^a 0 = man. 1 = woman; G = Gender SL = study level I = internship CS = coaching sessions QC = quality coach

According to the regression analyses, the effect of gender on self-directed learning in career and career identity is larger when coaching is added to the model. For career identity, the positive impact of a higher age decreased by adding coaching in the model. Coaching in this case was thus a mediating variable and explained a part of the total variance. The positive impact of a higher study level on self-directed learning in career was very slightly larger when coaching was added. The positive effect of doing internship decreased by adding coaching to the model. The same can be concluded for career identity. Here the positive effect of doing internship disappeared by adding coaching to the model.

Sobel tests

To test whether coaching mediated between the student characteristics and self-directed learning in career and career identity also a Sobel test was conducted (Sobel, 1982). There was a Bonferroni correction applied to the significance level. By dividing the alpha of .05 through the nine tests, the significance level turned out to be $p < 0.0055$.

Gender, study level and internship were significantly related to coaching sessions and coaching sessions significantly related to self-directed learning in career. Therefore a Sobel test was conducted for these student characteristics. For all included characteristics, coaching sessions appeared to have a mediating effect. The mediating effect of the variable quality of the coach was tested for the independent variables study level and internship. From the results of the Sobel test can be concluded that quality of the coach significantly mediates for the positive influence of a higher study level on self-directed learning in career.

The Sobel test was also conducted to test the mediating effect of coaching in the relation between student characteristics and career identity. It appeared that only coaching sessions significantly mediated the effect of gender on career identity. The results are shown in Table 7.

Table 7
Sobel tests for self-directed learning in career

Test	SDL		CI	
	<i>z</i>	<i>p</i>	<i>Z</i>	<i>p</i>
Gender x CS	-3.39	0.001*	-3.17	0.002*
Age x CS			2.49	0.013
Study level x CS	-3.21	0.001*		
Internship x CS	4.45	0.000*		
Age x QC			0.99	0.322
Study level x QC	3.36	0.000*		
Internship x QC	2.09	0.036		

* Correlation is significant at the 0.055 level (Bonferroni correction).

Note. CS = Coaching sessions; QC = Quality of the coach; SDL = Self-directed learning in career; CI = Career identity

Discussion

Coaching on SDL and CI

Preparing students for the labor market is a top priority for vocational educational institutions. While a lot of time and money is spent on supporting students in their professional development, relatively little is known about the effectiveness. Therefore, this research was conducted to investigate the effect of student characteristics and students' perceptions of coaching on self-directed learning in career and career identity.

As previously concluded by Brandenburg (2014), the results show that coaching indeed stimulated self-directed learning and the development of the career identity. In this study, coaching is measured with the two concepts 'coaching sessions' and 'quality of the coach'. Both the positive perception on coaching sessions and the quality of the coach had a positive effect on SDL and CI. The influence of coaching on self-directed learning in career was higher than the influence on career identity. This could be due to the fact that self-directed learning in career has to do with behavior and therefore is easier to change than career identity, that more depends on feelings and thoughts. It could also be due to the fact that during coaching sessions the main focus is on the current performance in school, instead of the future career (Mittendorff et al., 2010; Kuijpers & Meijers, 2009; Winters et al., 2009). Further research has to determine if a stronger focus on the future career during coaching sessions will strengthen self-directed learning in career and the career identity, and therefore better prepare students for the current labor market. For example, this could be done an experimental design in which coaching sessions focused on the study progress and coaching sessions focused on the future career, and their impact on SDL and C are compared.

Student characteristics on SDL and CI

Now we know that both coaching and the perception on coaching are important, the question arises how coaching can be optimized and adapted to different needs of students. If this becomes clear, it will enable schools to better guide students in directing their own learning in career and form a stronger career identity. To answer this question, it is important to know which factors can predict SDL and CI and how these factors interact with coaching. From this study, it can be concluded that the combined influence of the student characteristics is quite small, but not negligible. After all, the effect of student characteristics did not disappear, when the effect of coaching was taken into account. Therefore schools should also take these characteristics into account.

Striking results with respect to individual characteristics are discussed in more detail. As expected from literature on study-related characteristics (Litzinger, Wise & Lee, 2005; Raemdonck, 2005), the study-related characteristics study level and internship had a stronger impact on self-directed learning in career (compared to demographic characteristics). In contrary, the demographic characteristics gender and age explained the larger part of the variance for CI. For schools it is harder to influence the effect of gender and age, because these student characteristics are unchangeable. However, it is important that schools are aware of the differences.

Take for instance the difference in gender and age. From this research, it can be concluded that students get a stronger career identity as they get older. The effect of age on career identity is not influenced by coaching. For gender, the results are more complicated. In this study, female students had a stronger career identity than male students. Previous research on this topic showed that women were better in goal setting and monitoring (e.g. MacDermid, Lee, Buck & Williams, 2001) and men were better in planning and networking (Claes & Ruiz-Quintanilla, 1998; Mannheim, Baruch & Tal, 1997). A possible explanation could be that the questions about self-directed learning in career were more focused on the aspects in which woman were better, but this could not be deducted from the questionnaire used in this research. After all, the questions were compared to the elaborations of the aspects (Raemdonck, 2006), and it appeared that all questions were almost equally divided among the four aspects. In order to clarify the effect of student characteristics on the individual aspects, subsequent studies could classify the questions on SDL in advance and compare the scores on the different aspects with each other.

The observed differences for gender are partly influenced by the impact of coaching. The perception of coaching sessions actually acted as a suppressor variable. This means that the direct effect (gender on SDL and CI) and the indirect effect (gender on CS and CS on SDL and CI) cancel each other out (Kenny, 2014). The negative perception of female students on coaching sessions causes a smaller difference between men and women. Excluding coaching would make the female students (compared to male students) even score higher on SDL and CI.

In this study, gender was not the only characteristics which influence was suppressed by the coaching variables. The positive effect of study level was slightly suppressed, because the indirect effects and direct effect on SDL canceled each other out. Besides that, the influence of the perception on coaching sessions was opposite to the perception of the quality of the coach. The negative perception on CS and the positive perception on QC, caused that there was hardly any visible difference between the direct effect and the overall effect of study level on SDL.

Content versus coach

Similar to the relation between study level and SDL, mentioned above, it appears that the perception of the content (coaching sessions) had a larger effect on SDL and CI than the quality of the teacher. For this reason, it is favorable that the government is focusing on the way the coaching must be provided. However, it is also important to take in consideration the quality of the coach, since this also had a positive influence. Therefore it should be examined which qualities teachers, according to students, should have to be a good coach, if every teacher has these qualities and therefore is suitable for coaching students. Complementary to that, further research could investigate what the effect of providing training for teachers is. Besides that, teachers should also be given the choice whether they want to coach students or not, this should no longer be an obligation, because when you give teachers more autonomy, this will result in more motivation and enhanced performance (Gangé & Deci, 2005).

Methodological limitations

Previous research (Millar & Brotherton, 2001) revealed that the perception of the teacher and the student do not correspond. This study only investigated the perception of the student, because this side has not been given sufficient attention in previous research. Now the value is proven, it is interesting to examine how student and teachers differ in their perception. It is recommended to investigate both students' and teachers' perceptions on coaching in the same study, so there can be made a good comparison.

Besides the choice for the student perspective, also the choice for the sample, has consequences. This study is very comprehensive, because all study levels and study years are included and there was a very large size. Despite the comprehensiveness, the effects found in this study could be relatively hard to generalize. This is because of the sample: it is a case study within Landstede. It is possible that their approach differs from the approach of other vocational schools. However, it can be expected that the coaching within Landstede is probable comparable to other coaching programs, because it is commissioned by the government (Ministry of Education, Science and Cultural Affairs, 2004) and therefore has the same goals. In order to confirm this assumption, further research should explore if and how vocational schools differ in their approach and the effects of their programs. In this way schools also can learn from each other.

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