



# Dynamics in higher education choice: weighing one's multiple interests in light of available programmes

Jonne Pieter Vulperhorst<sup>1</sup>  · Roeland Matthijs van der Rijst<sup>2</sup> · Sanne Floor Akkerman<sup>1</sup>

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## Abstract

Recent studies have shown that students' interests are decisive in making a substantiated higher education choice, yet do not indicate how students decide which interests they aim to pursue. This study aimed to find the considerations students have when weighing interests and higher education programmes. Thematic analysis was applied to uncover considerations based on semi-structured interviews with 20 Dutch high-school seniors. Students weighed their interests from an interest-to-programme perspective (contrasting interests and deciding which is most important for their future) and from a programme-to-interest perspective (evaluating how possible programmes reconcile with one's interests). By applying both perspectives simultaneously, students dynamically considered which programmes and interests they wished to pursue. These findings imply that higher education choice theory and studies should acknowledge that the programmes and interests students consider are dependent on the feed forward of the considered interests on programmes and the feed back of considered programmes on interests.

**Keywords** Multiple interests · Higher education · Programme choice · Web of reasons · Student choices · Narrative psychology

## Introduction

Deciding which higher education programme to pursue is a long-term and complex process (Leach and Zepke 2005; Taylor and Harris-Evans 2018). Recent studies have argued that the higher education choice can be seen as an interest-based choice (e.g. Holmegaard 2015). Interests may direct students' future choices as students think about who they want to become

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✉ Jonne Pieter Vulperhorst  
j.p.vulperhorst@uu.nl

<sup>1</sup> Department of Education, Faculty of Social and Behavioural Sciences, Utrecht University, Langeveld building, Room F 3.01, Heidelberglaan 1, 3584 CS Utrecht, The Netherlands

<sup>2</sup> Leiden University Graduate School of Teaching, Leiden University, Leiden, The Netherlands

based on their interests, which starts at the end of primary school and continues during later study and working life (Sharp and Coatsworth 2012). Students may regret not pursuing specific programmes or interests (Kucel and Vilalta-Bufi 2013), which can lead to drop out from the programme (Holmegaard et al. 2016). To get more insight in the higher education choice process and to support students to make a substantiated choice, one should first learn how students weigh their multiple, often diverging, interests when trying to decide which they are going to pursue in a programme (Holmegaard 2015). The present study therefore focuses on the considerations students have when weighing their interests in light of possible future study programmes.

## The higher education choice process from a personal perspective

Traditionally, the higher education choice process has been studied from a socio-economic perspective. Research taking this perspective studies factors that influence the individual's choice to enrol in a specific institution. Several models have been put forward by Chapman (1981) and Hossler and Gallagher (1987) and later extended by Cabrera and La Nasa (2000) and Perna (2006). These models tend to emphasize the sociological and economic factors (e.g. parental education, cost of a programme) that may explain part of the variance in individuals choosing to enrol in specific programmes and colleges.

Based on a synthesis of college choice literature, Bergerson (2009) stressed that the socio-economic perspective has been most dominant in literature and suggested that as a next step, studies should take a personal perspective. A personal perspective has added value in that it focuses more on the individual's decision-making *process* and aims to identify and explain the doubts students have and ways in which they overcome them. Making the student's own choice process more clear may help altering existing theories or putting forward new ones and inform policy in what ways they may support students in making a sustainable choice (Bergerson 2009).

Several models have already been developed that, next to describing socio-economic factors, touch upon the possible doubts and considerations students have, such as the expectancy-value model (Eccles and Wigfield 2002) or the social cognitive theory of career (Lent et al. 1994). According to these models, students try to find a programme that is associated with the highest personal gains and lowest costs. Students may doubt between several programmes and may list positive and negative reasons for pursuing that specific programme to come to a final decision. Multiple factors have been identified that lead to a positive or negative evaluation of a programme, for example: ability in the programme (Eccles and Wigfield 2002; Lent et al. 1994), institutional quality (Brooks 2003), peer expectations (Brooks 2003; Paat 2016) and career prospects (Eccles and Wigfield 2002; Paat 2016; Pinxten et al. 2015). The most important factor identified in these studies are often students' interests (e.g. Malgwi et al. 2005; Pinxten et al. 2015). Nevertheless, these studies give no insight in the process of how students weigh these different reasons and why interests may play a key role in this decision-making process.

## Interests and choices

Interest can be defined as 'the psychological state of engaging or the predisposition to reengage with particular classes of objects, events, or ideas over time' (Hidi and Renninger 2006, 112). Inherent to the pursuance of interests is that students aim to reengage with their

interests *over time* and therefore are strongly future-oriented (Dewey 1913; Akkerman 2017; Hofer 2010). As students form images of who they want to be based on their current interests (Sharp and Coatsworth 2012), it is not surprising that some higher educational models argue that interests may be central in students' process of deciding which programme to pursue (Holmegaard 2015).

In daily life, however, students have multiple interests (Akkerman and Bakker 2019). From at least kindergarten on, students have developed several interests in objects in and outside the school domain. These multiple interests constantly compete for students' time, as not all can be pursued (Hofer 2010). The process of contrasting interests and deciding what to spend time on likely occurs intuitively also depending on the opportunity structure provided for specific engagements (Bergin 2016). Nonetheless, when confronted with a high-stake decision such as the higher education choice, interests may be weighed more explicitly (Vulperhorst et al. 2018).

### **Weighing multiple interests**

Students have to weigh their multiple, often diverging, interests, and have to commit to a (specific set of) interest(s), as students cannot pursue all their interests in a higher education programme (Hofer 2010; Vulperhorst et al. 2018). Deciding which interests to pursue is difficult, as committing to specific interests means other interests cannot be pursued, which may lead to regretting the choice students made (Kucel and Vilalta-Bufi 2013).

During this weighing process, students start to express reasons why they want to pursue specific interests (Akkerman and Bakker 2019; DiGiacomo et al. 2018). In most research, it is assumed that each interest and related reasons exist independently of others, taking interest-based reasons as separate factors contributing to the choice for a specific higher education programme (e.g. Mikkonen et al. 2009). Nonetheless, Holmegaard et al. (2014) have shown that the interest-based reasons students express may be compared and contrasted with each other, indicating interdependence between students' interests and interest-based reasons (e.g. If a student states she likes learning about diseases the most, this implies she likes learning about her other interests to a lesser extent). Acknowledging this interdependence in interest-based reasons, students are likely to consider their *relative* ability, enjoyment and social support as a whole when making a decision. We therefore argue that it may be more informative to focus on the contrasting of students' multiple interest-based reasons, as this may inform us about the doubts or considerations students have when trying to decide which interests they wish to pursue.

### **Interest-to-programme and programme-to-interest perspective**

Studies taking a personal approach emphasize that more insight is needed in what considerations students have related to which interests they aim to pursue, without explicitly taking into account that students may be constrained by the future options available to them. Future programmes may constrain interest pursuance, as not all interests or combinations of interests might be pursued in programmes (Buzzanell and Lucas 2013; Gottfredson 1981). Programmes have to be actively explored to see what possibilities they provide for specific interest pursuance.

Students may reason from both a *programme-to-interest perspective* and an *interest-to-programme perspective*. Both perspectives differently orient reasoning, with a *programme-to-interest perspective* starting from the *future* programmes available and then looking at oneself and questioning how one's interests would fit in these options versus the *interest-to-programme perspective* starting from one's own *past and present* interests and then looking at which future programme this would logically lead them. This implies that students may provide different reasons from a programme-to-interest and an interest-to-programme perspective and may have different considerations from both perspectives.

Which interests students aim to pursue is likely to be dependent on how students attune both perspectives. Based on narrative psychology and transition literature (Holmegaard et al. 2015; Zittoun et al. 2012), we expect that the interests students wish to pursue (i.e. interest-to-programme perspective) *feed forward* to the programmes they consider and the programmes that students consider (i.e. programme-to-interest perspective) may simultaneously *feed back* on the interests they wish to pursue. The feed forward of interests has to some extent been studied, and studies indicate that students' most important interests may be directive for which programmes they consider (e.g. Holmegaard 2015). In contrast, studies have only recently begun to explore how possible programmes feed back on interests. Akkerman and Bakker (2019) indicated, based on a small longitudinal study of four students, that students' interests changed based on what was specifically possible in light of the future programmes they considered, implying that the feed back of programmes may lead to changes in the interests students wish to pursue.

As we aim to study how the feed back of programmes may impact the interests students consider, we should acknowledge that students reason from the present, and therefore will be selective in expressing which interests and programmes they have considered in the past (Holmegaard et al. 2015). We do not know in what ways feed back of programmes may lead to changes in the interests students aim to pursue, and we may expect that students present a consistent story from the present why they aim to pursue specific interests in a programme. Therefore, it is interesting to study to what extent and in what ways students explicitly mention that programmes may provide feed back that potentially leads students to make a shift in the interests they consider to pursue.

## The present study

The present study expects that students will weigh multiple interests and related reasons simultaneously and try to attune an interest-to-programme and a programme-to-interest perspective when deciding which interests to pursue in a specific programme. We aim to identify the considerations students have when weighing their multiple interests. Moreover, we study in what ways the feed back of explored programmes may lead to changes in the interests students consider to pursue, which may give insight in the internal dynamics inherent to the higher education choice process of students (Leach and Zepke 2005; Taylor and Harris-Evans 2018). The following research question was formulated:

What considerations do students have when weighing their multiple interests in light of their future study programmes and in what ways does the feed back of explored programmes lead to changes in the interests students consider to pursue in a programme?

## Method

Interviews were deemed most suited to uncover considerations in the weighing process of students' multiple interests, as interest-based reasons are expressed in narratives students tell about themselves (Holmegaard et al. 2015). Moreover, in narrative interviews, students provide reasons why they are going to make a certain choice through aligning past and present experiences and considered futures (Crossley 2000), thereby giving insight in how previously considered programmes may feed back on the interests they considered.

### The Dutch educational system

After primary school, Dutch students enter in the secondary vocational education track, general secondary education track or pre-university track (see Nuffic 2019). Approximately 20% of the students transition to the pre-university track. Our sample consisted of pre-university students, as most of these students go to research-based universities or universities of applied sciences, whilst less students enter higher education from other tracks. After 3 years in the pre-university track, students are required to specialize in subject clusters or educational profiles: Culture & Society, Economy & Society, Nature & Health, or Nature & Technology. After three more years, students transition to higher education. In the Dutch higher education system, students directly choose to enrol in a specific programme at a specific institution (see Nuffic 2019). The pre-university diploma allows students to enrol in all programmes without other admission criteria, although some programmes require students to graduate with a specific profile. Moreover, some highly selective programmes apply admission at the gate.

### Participants

Twenty students were randomly selected for interviews from a larger sample of 244 pre-university students who participated in a longitudinal experience-sampling method measuring students' interests. Students were recruited through high schools and could voluntarily participate. As too many students were willing to participate, a random sample of students was drawn per school. The current study only concerns the interviews, which were held 5 months before students had to commit to a programme. Students were distributed across 11 secondary schools in the middle of the Netherlands. To make sure reasons and considerations were not limited to certain student or school characteristics, we tried to include a diverse group of students. We included students from different schools, which ranged from relatively large urban schools to small rural schools. Moreover, from each school, a male and female student were selected. No other background variables were available to sample on. From the two smallest schools, one student was selected, which resulted in the final sample of 20 students. All students were aged between 16 and 18 years old. Students of all educational profiles were included.

### Instruments and procedure

To uncover interest-based reasons and feed back of programmes on considered interests, individual interviews were held. The first part was set up as a narrative interview

(Holmegaard et al. 2015) consisting of open questions (e.g. can you tell me what options you are considering for next year?) and multiple prompts (e.g. can you explain more about the programme you just mentioned) to let students freely narrate why they are pursuing specific programmes and possible interests.

The second part of the interview consisted of semi-structured questions, to elicit all reasons for pursuing a programme and interest (e.g. can you think of more reasons to pursue this programme/interest?) and to let them explicitly weigh multiple interests at the same time (e.g. why are you considering to pursue interest X and not other interests?).

Interviews were piloted with two students who were not included in the sample. Some questions were altered to make them less ambiguous. A translated version of the final topic list can be found in the Appendix Table 1. Interviews lasted between 45 and 90 min and were conducted in a meeting room at the students' secondary school. All interviews were conducted by the first author to maintain consistency across cases. Interviews were recorded after permission and informed consent of the students, and were transcribed verbatim.

## Analysis

Thematic analysis (Braun and Clarke 2006) was applied. Interview transcripts were read thoroughly, and passages were highlighted when students mentioned why they wanted to pursue specific programmes or interests. Next, per interest, we identified which interest-based reasons were provided in the interviews through open coding and separately coded interest-based reasons that were related to why they considered pursuing specific interests in their future (interest-to-programme perspective) and interest-based reasons that were related to how programmes would adhere to specific interests (programme-to-interest perspective). Next, to summarize all interest-based reasons of each interest of a student, webs of reasons (Bakker et al. 2017) were created for each student (see Figs. 1 and 2). Webs of reasons summarize all reasons provided by a single student in which the valence of reasons (positive or negative implications for pursuing this interest) and how reasons may relate to each other is included. Furthermore, we identified students' considerations. Based on all contrasts between interest-based reasons, we openly coded the considerations students aimed to resolve with their interest-based reasons. We clustered considerations and grouped them in four themes.

Moreover, we analysed how programmes may feed back on the interests students wished to pursue and which feed back led students to a shift in which interests they aimed to pursue. In the interview, students explained how they made shifts in which interests they considered and explained how the reality of programmes (feed back) contributed to these shifts. These explanations were thematically analysed and clustered in four themes. Based on students' reported chronology of when they considered which interests and programmes, we created timelines in which the feed back of considered programmes on the interests was visualised and following from this, what shifts they made in which interests they considered (see Figs. 3 and 4). Considerations and feed back of programmes on considered interests were discussed with all authors multiple times to check and reach consensus about interpretations.

## Results

Two webs of reasons (Figs. 1 and 2) illustrate how students refer to the multiple interests they considered to pursue (i.e. rectangles) and what associated interest-based reasons they expressed from an interest-to-programme perspective (i.e. key words next to the lines coming from the interests). For example, in Fig. 1, you can find the two reasons why Grover considered pursuing his interest in computers in a future programme: He has always liked computers and he wants to learn more about how they work. Moreover, the figures illustrate how students integrated two or more interests in a single interest (i.e. lines that connect two interests). An example can be found in Fig. 1: Grover indicated to be able to integrate his interests in gaming and computer science. Students considered multiple programmes (i.e. ovals) and expressed multiple interest-based reasons from a programme-to-interest perspective (i.e. key words next to the lines coming from the programmes). For example, Fig. 2 shows how Riley argued she could pursue her interest in arts in a minor she could choose once enrolled in Architecture. Students explicitly mentioned they could combine multiple interests in a programme (i.e. lines connecting two interests from a single programme; see Fig. 2 where Riley argues Architecture allows her to combine both her interests in arts and technics). We identified whether interest-based reasons supported or discouraged interest and programme pursuance (i.e. plusses and minuses) and identified whether interests and programmes were still considered at the moment of the interview (i.e. the faded interests and programmes were *not* considered anymore). For example, Fig. 2 illustrates that Riley did not consider to pursue her interest in law anymore. Finally, we identified whether students had a dominant interest and programme at the moment of the interview (i.e. shaded interests and programmes were dominant). In these instances, students stressed they were quite sure they wanted to pursue certain interests or certain programmes (see Fig. 1).

Although these webs of reasons may show all reasons students have for pursuing specific interests, these webs do not show how they weighed and contrasted these different reasons in and over time. The next section reports the four considerations that students generally had, which explain how students weigh multiple reasons.

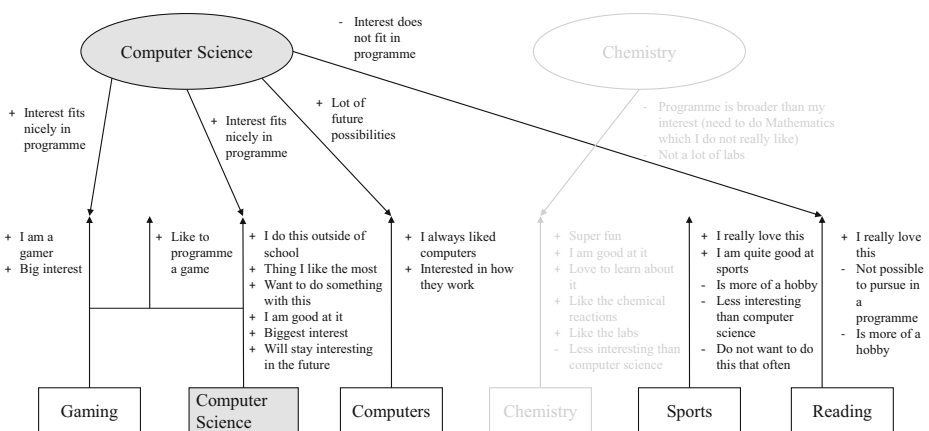


Fig. 1 The interest-based reasons of Grover

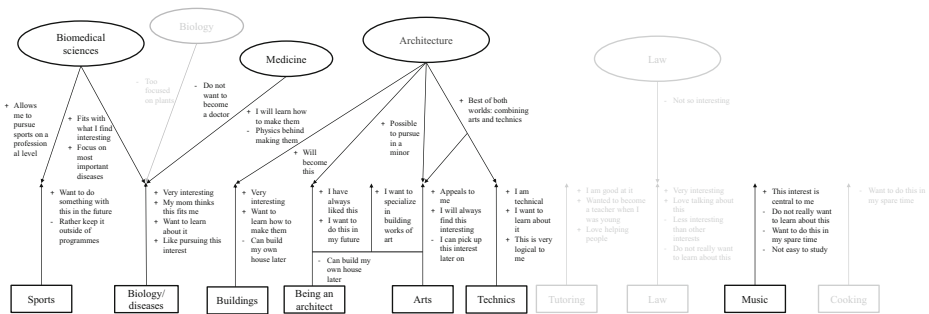


Fig. 2 The interest-based reasons of Riley

## Considerations when students are weighing their interests

### Finding interests that are pursuable in an academic future

Students considered, from an interest-to-programme perspective, which interests they wished to pursue in an academic future and which not. Decisive for this decision was what *function* students ascribed to an interest. Jolene: ‘Well, I love listening to music ... I think it is something you need to keep separate, to just enjoy it without thinking too much about it... maybe it will lose its relaxing function’. Jolene illustrates the contrast students made between relaxation-oriented interests, which were not considered further academically, and cognitively challenging interests, which were seen as holding future academic potential. Interest-based reasons mentioned by students which were related to this consideration were reasons related to keeping a specific interest as a hobby (see sports and reading in Fig. 1) and reasons related to academically learning about this in their future (see biology/DNA, buildings and technics in Fig. 2).

Interests that did not fit students’ standard academic image (e.g. drawing, cooking, sports) were often disregarded immediately as a possibility to pursue in their future, although students differed in whether they saw academic potential in these interests. For example, Edward stated that ‘I like playing video games, but this does not matter in deciding which programme I will chose, it’s like independent’. Uriah stated ‘I like games, so I wish to learn more about the design of gaming and like the psychology behind it’. Even though it concerns a similar interest, Uriah saw academic potential in his interest in video games, while Edward did not.

### Determining which academic interest is most important

Students considered which academically pursuable interest(s) was most important to them through weighing positive and negative reasons for each academic interest from an interest-to-programme perspective (e.g. ability, enjoyment, social support of others; see Figs. 1 and 2). Students thus argued which academic interest was most important through comparing and contrasting interests. Octavia argued:

So yeah I am pretty good in Biology, but I don’t know, I do not really like it. Physics is really nice, but then again I’m not so good at it, so I do not know whether it is smart to do something with it... I’m not a star in Chemistry either, but in Physics I’m like really dramatic.



Octavia provided reasons about her relative liking and ability and whether this would support or oppose interest pursuance to determine her most important interest. This contrasting illustrated moreover that interest-based reasons are not established independently, but in the comparative relations between interests, stressing *relative* ability, importance, enjoyment, etc.

Students tried to maximise the amount of interests they could pursue in and parallel to a possible programme, to resolve competition between multiple important interests. First, students tried to integrate their interests. Douglas: ‘I find computer things very interesting, but also like language recognition and stuff. To be able to do something like that with computers, I would find that very interesting’. By integrating his interests in computers and language, these interests no longer competed and he started searching for a programme that adhered to such integration. Nonetheless, integration of interests was often not possible due to academic divergence. Edward argued:

It is just if you have different interests that is hard to do, you cannot find something with like gaming and sports, yeah maybe something would be possible with that. But to combine gaming with language or something like that and maybe something with other interests as well, that is just like impossible.

Second, students typically considered which academic interests could be pursued parallel to a programme. If students could learn more about academic interests in other contexts than an academic programme, these interests were often not considered further. Students preferred pursuing interests that they thought could only be pursued in a higher education programme.

Third, students considered pursuing interests sequentially and argued they could pursue other interests after completion of an academic programme. For example, Riley (see Fig. 2) argues:

Architecture, I could pursue later in my life, I want to build my own house later and then I can talk with an architect and design it together. But I do not think I will do something with biology if I decide to pursue Architecture.

The search for their most important interest(s) led to a more or less dominant (set of) interest(s) which students considered to pursue in a programme. Some students identified a single dominant (set of) interest(s), which is illustrated in the web of reasons of Grover (see the shaded interest in Fig. 1). Grover: ‘Well I just like computer science best; it really is my number one, so I actively searched for options related to this’. Others had a hard time identifying a dominant (set of) interest(s), because none seemed important to them. Stan stated he did not have an academic interest he really wanted to pursue in the future. He argued he could only do something with his weak interest in societies: ‘I really tried to search... but clearly there are no other interests that fit me or my educational profile’. Finally, some students were conflicted about which interest was dominant. These students constructed different positive reasons for each interest, which is illustrated in the web of reasons of Riley (see Fig. 2). Reflecting a state of impasse, she described: ‘I always wanted to become an architect, but then I rediscovered biology and realized I just found it very interesting... I have a hard time deciding which I like more’.

### Determining the reconcilability between interests and programmes

From a programme-to-interest perspective, students provided reasons how reconcilable programmes and interests were (see Computer Science in Fig. 1 and Biomedical Sciences

and Architecture in Fig. 2). Students considered, based on the reconcilability of all their important interests with each considered programme, which programme and interests were favoured.

Lana: With Nutrition and Health [bachelor programme] I can focus on nutrition, learning about it and what is healthy and what not. I just find it fascinating how food works and what your body does with it... I also looked at Food Technology [bachelor programme], that is also about nutrition but is more focused on the process of making food instead of how it works in your body, so I like Nutrition and Health better.

This excerpt illustrates on the one hand that students evaluate each programme on how well these could be reconciled with their important interests, as each programme is evaluated how well it fits with Lana's interest in nutrition. On the other hand, this shows the interdependence of interest-based reasons constructed from a programme-to-interest perspective as Lana sets off how well her interest is suited to each programme relative to the other programmes she considered.

Evaluating the reconcilability of a programme and an interest could lead to disappointment, sometimes against expectations. Octavia: 'I first considered Architecture as I really love drawing and designing ... but it did not really work out ... I just do not want to do constantly the same thing with my creative interests'. Octavia's interest was not reconcilable with the programme, as she would have been required to adjust her interest into something she would have not found interesting anymore.

Students considered explicitly whether multiple interests would be reconcilable with programmes, as this may reduce competition between interests. Marlon: 'Artificial Intelligence is very broad and programming, linguistics, philosophy all fit and interest me'. Artificial Intelligence allowed Marlon to continue with multiple of his important interests. Nevertheless, broad programmes were not always favoured, as students also considered whether programmes had uninteresting content. Marlon: 'I have the idea that Political Science is like broader, also focused on the law and like the political system, and that just does not suit me'.

### **Finding an optimal balance between time spend on interests pursued inside and parallel to a programme**

Students combined both perspectives in this consideration. From an interest-to-programme perspective, students provided reasons related to how much time they wished to spend on an interest in the future. From a programme-to-interest perspective, they provided reasons on how much time they would be required to spend on interests in the programme and how much time would be left to spend on interests parallel to a programme. Combining both perspectives, students searched for a balance between time spend on interests in and parallel to the programme. Students differed in what they considered to be the optimal balance. Tisha argued: 'I do not think the time left to do these [out-of-school] interests influences which study I am choosing. It does not matter as I still can do all these things, maybe to a lesser extent though'. Nigel argued: 'I do not like spending time on school, I just like it when I have the afternoon and do not have to do something school-related... Well, yeah that is just me'. Nigel argued he therefore rather enrolled in a programme which required less effort from him, as his interests parallel to a programme were very important to him.

### Shifts in the interests students consider

As expected, the interests students identified as most important and aimed to pursue feed forwarded to the programmes students considered, as students explicitly considered how reconcilable the programmes were with their important interests, and consequently multiple programmes were considered and evaluated (see the quote of Lana above). Programmes also provided feed back on the interests which sometimes led students to shift in what they considered to be their most important interest. In the following excerpt, multiple of these shifts can be found in what Heather considered to be her most important interests for the future:

Well, in the beginning I wanted to do something with classical languages, as I really like Greek... no study ancient Greek exists, there is only a Greek and Latin programme. I do not have Latin, and I'm not that good in Latin, so that's a shame. Moreover, I do not know what future job opportunities I would have with this programme. So I thought maybe I should do dentistry, as I could then take over my fathers' practice and the study seemed super nice. Only... I do not see myself as a dentist, I rather have no patients to take care of. I rather be the one working behind the scenes, in a lab or something. Yeah.. that fitted more with Biomedical Sciences.

We identified four ways how feed back of programmes led to shifts in which interests were considered.

Two timelines are presented to illustrate students' considerations and programme feed back which led to shifts in which interests they considered to pursue in a programme (see Figs. 3 and 4). The line in the middle of the figure represents the chronology as recalled by the participant, and at each time point (vertical line), specific events are mentioned in the texts above or below the line. Italicized text represents the identified considerations presented earlier, and underlined text represents the feed back of a programme that led students to shift in which interest(s) they aimed to pursue.

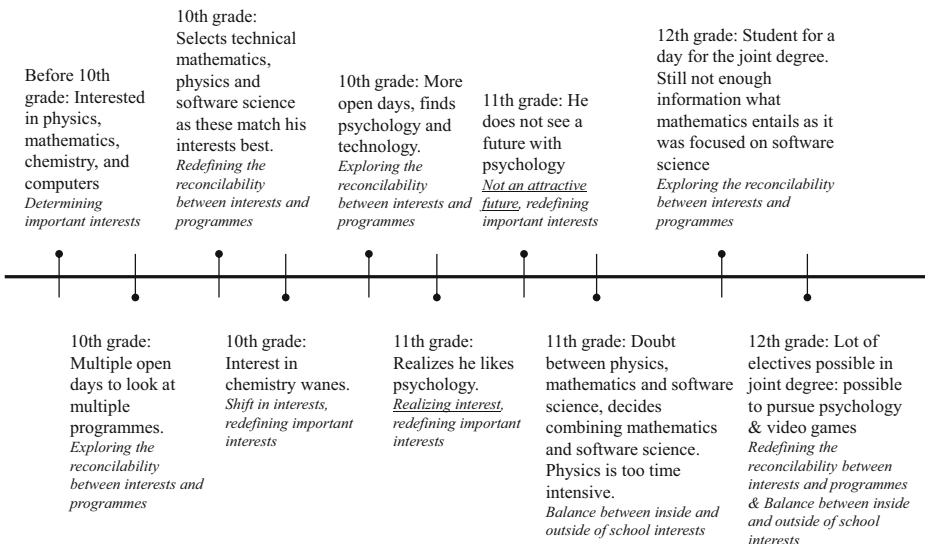


Fig. 3 The interest considerations and shifts as reconstructed by Uriah

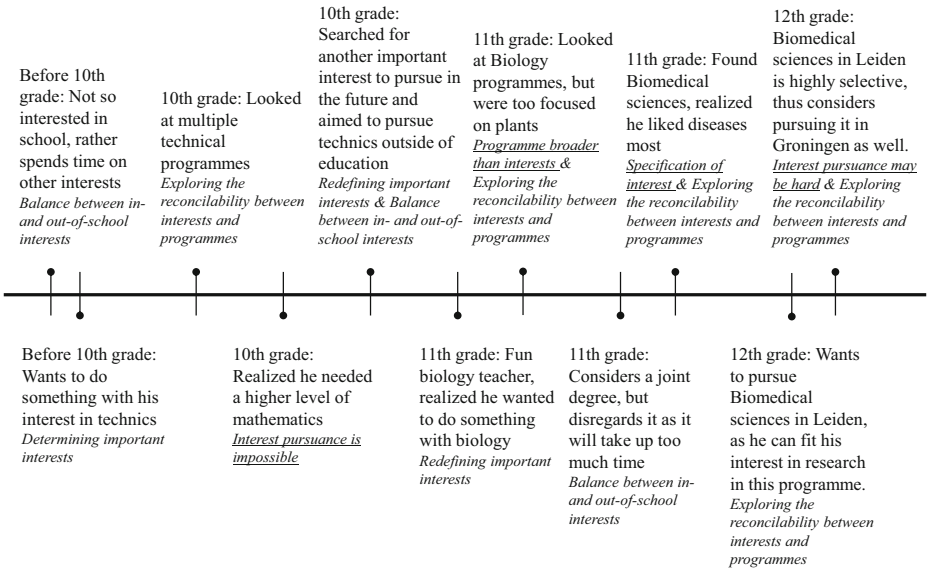


Fig. 4 The interest considerations and shifts as reconstructed by Kevin

**The programme adheres to more than what students are interested in**

The most common form of feed back that led students to a shift in which interest(s) were aimed to pursue was that the programme adhered to an interest too much, in an unappealing way (see the quote of Octavia above), or that a programme adhered to other content students found uninteresting, even though interests and programmes seemed to be reconcilable. Students were required to pursue the content they found uninteresting if they committed to the specific programme and interest and sometimes shifted in which important interests they aimed to pursue as they realized this content may be an inherent part of pursuing this interest in a future programme. Bart:

I went to a student for a day of Econometrics and they scared me that I would have to do a lot of mathematics, which is not my thing. So I decided to leave it. Then I looked at Fiscal Economics... and then I really looked at what it was and I decided this was not it for me as well.

Pursuing his interest in economics in the Econometrics programme implied Bart had to pursue mathematics as well, which he found uninteresting. Therefore, he decided to explore new programmes, but once again came to a similar conclusion. After this, Bart indicated he stopped considering economics and shifted in what he considered to be his most important academic interest.

**Important academic interests cannot be pursued in a programme**

Another common form of feed back that led students to a shift in which interest(s) they aimed to pursue was that important interests sometimes could not be pursued in an academic programme. Students indicated they could not pursue their important interests as they failed to meet requirements for enrolling in a specific programme; they thought that the selection of

programmes was too strict or that no academic programme was reconcilable with a specific important interest. Kevin: ‘I first thought about doing something with technology, as I really like that... but I realized I needed a higher level of Mathematics than I will graduate with’. Kevin could not find a programme that allowed him to continue with his interest in technology in an academic way. Therefore, he had to find another important academic interest, find programmes that were reconcilable with this interest and had to decide how much time he could spend on interests in the programme, as he now wanted to do something with technology in his spare time (see Fig. 4).

### **Programmes do not lead to a positive academic future**

Students sometimes learned that the interests they aimed to pursue in a programme would probably not lead to an academic job in which these interests can be pursued, as future job opportunities were scarce in that academic field. Future job opportunities thus feed backed, as an extension of a specific programme, on the considered interests. As some students found it only worthwhile to pursue specific interests if it leads to a possible future in which they can work with these interests, these students made a shift in which interest(s) they aimed to pursue (see Fig. 3). Other students found the lack of future opportunities with a programme less problematic and consequently did not shift in which interest(s) they wanted to pursue in the future.

### **Realising and reconceptualising interest**

The feed back of the programmes did not always lead to disregarding the interest that was previously considered but could lead to a realisation that other content might be interesting too or could lead to a shift in the conceptualisation of an interest.

Students could realise they had interest in specific content, only after exploring specific programmes. Uriah illustrates he only realised when exploring Software Science, that he had an interest in psychology (see Fig. 3). He subsequently reasoned he has liked psychology for a long time as he linked this to his long-term interest in games and game design: ‘There is just a lot of psychology in it [game design], yeah.. I just find it very fun how it works and how to design it that people are going to react in a certain way’. This quote illustrates that students may recognize and signify events from the past that support the realising of the interest in the present sparked by the exploration of a future programme. When mentioning reasons why he considered pursuing Software Science, he explicitly stated his interest in psychology was reconcilable with the programme.

Moreover, students may reconceptualise their interests. Riley: ‘I started to look for the things I really liked in biology and I went to open days and I noticed that it was not something like Medicine, or only cells, but I am rather interested in diseases’. Riley realised she liked DNA and diseases most and reconceptualised her interest in biology based on the feed back of the programmes she explored.

## **Discussion**

The present study focused on the considerations students have when weighing their multiple interests in light of their future study programmes and on the ways that feed back of programmes may lead to shifts in the interests students aimed to pursue. As expected, we

found the reasons that students provided were interdependent as they contrasted them with each other. This implies that it is important to focus on the whole web of reasons one has for choosing a specific option (Bakker et al. 2017), rather than focusing on separate reasons students have for pursuing a specific programme or interest.

Four considerations were identified that explain how students contrasted their interest-based reasons. First, from an interest-to-programme perspective, students considered which interests were academically pursuable. Cleaves (2005) and Archer and colleagues (2010) have already found that not all interests hold academic potential and students rather continue their out-of-school interests outside of education. Based on our results, it is important to add that out-of-school interests may hold academic potential for students, which may be dependent on what function this interest has for a specific student (e.g. gaming is *only* relaxing versus gaming may be something I want to learn more about).

Second, students considered which of their present interests were most important for an academic future. The idea that finding the most important academic future-oriented interest is central to the higher education choice process has been put forward by Holmegaard et al. (2015). We add to this by showing *how* students try to resolve competition between multiple important interests, either by integrating interests, by pursuing interests in parallel in or outside an educational programme, or by delaying pursuance of certain interests.

Third, from a programme-to-interest perspective, students considered how reconcilable future programmes were with past and present interests. Although prior studies have acknowledged that students have to deal with the range of programmes that is available to them (e.g. Buzzanell and Lucas 2013), this study shows that students explicitly evaluated multiple programmes and compared these realistic options with the interests they aimed to pursue in the future.

Finally, students explicitly considered both perspectives when trying to find a balance between time spend on interests in the programme and parallel to the programme. Several studies have already suggested that the interests that one aims to pursue parallel to a programme may compete for time with interests that are pursued in a programme. The interests one wishes to pursue parallel to a programme may therefore influence which interests are pursued in a programme (e.g. Hofer 2010; Vulperhorst et al. 2018). Our results illustrate this point further by showing how students carefully balance time spend on interests in and parallel to an educational programme.

The considerations from the interest-to-programme and programme-to-interest perspectives usually conflicted, as the feed forward of which interests students aimed to pursue did not directly align with the feed back of how these interests could be realistically pursued in the programmes. Students had to attune these conflicting perspectives through exploring and reflecting on their programmes and interests in a cyclical manner in order to find a programme that they felt adhered to their interests. Although previous studies have shown that students explore and reflect upon multiple programmes in a cyclical manner (see Germeijs et al. 2012; Milsom and Coughlin 2015), we have shown that students may explore and reflect on their interests *and* programmes in a cyclical manner. Which programmes were considered was dependent on the important interests students aimed to pursue, but which interests students aimed to pursue was also

dependent on what was possible in future programmes. More specifically, we found programmes that could feed back on interests if not all of the content of programmes adhered to interests, if interest pursuance may be hard or impossible in a programme, or if future opportunities were not attractive. This suggests that transitions evoke heightened reflexivity during which people tend to redefine themselves in light of the possible choices they can make (Bruner 1990). In transition to higher education more specifically, the programmes students consider may not only lead to reconsideration of which interests are most important to pursue in a future, but may even lead to reconceptualisation and specification of one's interests.

### Limitations and future research

Holmegaard and colleagues (Holmegaard et al. 2014) have shown students' narratives can shift while exploring and choosing a higher education programme. This may imply that the considerations we have found and the ways how the feed back of programmes leads to shifts in which interests students wish to pursue may be time-variant. When following the choice process of students longitudinally, maybe more considerations and ways of feed back may become apparent that specifically play a role at the beginning or the end of the choice process, as we studied the higher education choice process 5 months before students had to make a final choice.

Furthermore, we identified the ways programmes may feed back on the interests students wished to pursue based on how students recalled their choice process. Although students may refer to actual experiences, which experiences they recall and how they interpret them is dependent on their present considerations (Holmegaard et al. 2015). Therefore, we may have underestimated the ways programmes may feed back on the interests students consider, as they try to create a coherent narrative of making their choice at a specific moment in time. Future research could study longitudinally the considerations and the feed back of programmes to validate and add to our results.

Results pertain to the Dutch context in which admission criteria are often not present, universities all roughly have the same quality and distances are relatively small between universities. In educational contexts of other countries (and cultures), the accessibility of programmes, the distance to university and the reputation of the university may play a bigger role in interest pursuance and programme selection (e.g. Tavares and Cardoso 2013; Sojkin et al. 2012). This might imply that students in these countries take the programme-to-interest perspective more than the interest-to-programme perspective. Nevertheless, given that all students have interests that orient them to future, we do believe these students have similar considerations and experiences of feed back from programmes on their interests. To get a better grip on this, we propose that future research considers how both perspectives and feed forward and feed back processes potentially play out differently in and across countries with different educational infrastructures and space to pursue interests.

We may have influenced students' weighing process through interviewing them. During the interview, we asked students to reflect on why they wanted to pursue specific interests and programmes, and while thinking out loud, students may have come to formulate new reasons or may have framed their considerations differently. Although we can see this as a limitation as we do not know how the interview may have impacted

students' thought processes, it can be considered a useful tool for practice. Engaging in such an interview with students may help in attuning both perspectives, as students are stimulated to reflect on why they consider specific interests and programmes.

For future research, it may be interesting to identify processes that shape the interests and programmes students consider. For example, students' exploration behaviour may be related to what and whether they know about programmes (Germeijs et al. 2012), thereby influencing how interests and programmes are attuned over time. These specific exploration processes in turn may be dependent on whether the home context can provide support in gathering information (e.g. social network of the family; Holmegaard et al. 2014), the tendency of the individual to commit to certain options (see Van der Gaag et al. 2016), and how institutes make information of possible programmes available. Providing insight in what and how processes impact students' considerations when weighing their interests and programmes over time may give an even more detailed account of how students go through the higher education choice process.

### Practical implications

Some tentative practical suggestions can be given. Students can be stimulated by counsellors to explicitly consider both perspectives by asking them questions related to the four considerations mentioned. Students should be stimulated to reflect on what they think are worthwhile future interests to pursue, what their most important interest for the future is, how these interests may reconcile with considered programmes, and how they will balance time between the educational programme and interests they want to pursue parallel to the programme. Drawing a web of reasons as we have done for our analyses might be used as a practical tool for reflection in counselling practices. Through stimulating students to think both about the interests they want to pursue and how they fit in a programme, students explicitly have to attune an interest-to-programme and programme-to-interest perspective. This may possibly lead to several cycles of attuning both perspectives but may also lead to higher persistence in a programme, as students are more likely to persist when they have a realistic image of what a programme entails and how the programme (partly) fits or does not fit with their interests (Holmegaard et al. 2016).

Furthermore, higher education programmes can help students in their process through the information they provide about a programme. Information allows students to specify what interests the programme intends to adhere to, but also what space or degrees of freedom there is left for students to explore their own, existing or emerging interests in the same, related or other disciplines. For example, if a Psychology programme focuses mainly on presenting Psychology as a disciplinary field, this may attract students who are strongly interested in psychology, but not students whose interests go beyond psychology (mathematics, communication). Contrarily, Psychology could present itself as a multidisciplinary programme. This may attract students who are broadly interested but may put off students who are solely interested in psychology (see Akkerman 2017). This consideration is then inherently also a strategic decision where, by means of the information, programmes anticipate what students (i.e. with what kinds of interest profiles) they want to invite in (e.g. interdisciplinary interested). Future research could focus on the specific nature of



the information that programmes provide and follow the uptake of this by students in evaluating how this information may feed back on the interests students consider to pursue.

### **Implications for interest development**

Interest development is often characterised as a process that stabilises students' interaction with the object of interest; these developed forms of interest rarely change after adolescence (Hidi and Renninger 2006; Low et al. 2005). Based on our findings that interests can be redefined based on the feed back of possible future programmes, we challenge this conception. In periods of transition, we can see how interests may shift as they may be reconceptualised or integrated with other interests (see also Akkerman and Bakker 2019; Vulperhorst et al. 2018). Interest development theories should acknowledge that, at least in periods of transition, even developed forms of interests may change over time (Akkerman and Bakker 2019).

Moreover, our results show interests are set off against each other and may compete for pursuance in a programme. This implies interests should not be studied separately, but the whole interest profile of students should be taken into account when studying interest development (Hofer 2010). How students resolve competition between their multiple interests will have implications for how their interests develop further, as students tried to integrate or combine multiple interests. Although some recent articles have acknowledged the multiplicity in interest development (e.g. Akkerman and Bakker 2019; Vulperhorst et al. 2018), most research is only focused upon the development of a single interest (e.g. Ainley and Ainley 2015).

### **Implications for higher education choice theories and studies**

Our results supported the claim that interests are important in the higher education choice (e.g. Malgwi et al. 2005), as students searched for their most important interests to base their decision for a higher education programme on. Our results add a more refined explication to existing higher education choice process models (e.g. Holmegaard 2015) as we have shown how interests may be weighed and negotiated in and parallel to programmes and what considerations students have during this process. As the reasons students put forward for interest pursuance are interdependent, we discourage future studies to focus on identifying separate reasons and assessing the importance of these reasons. Moreover, the importance of these reasons may fluctuate over time, depending on the narrative students express at that time (Holmegaard et al. 2014). Rather than focusing on the reasons students provide, studies should focus on how they contrast and weigh these reasons and what considerations they have when deciding which programme to pursue.

This study conceptually contributes to the field through showing that the higher education choice is inherently dynamic. The attuning of the interest-to-programme and programme-to-interest perspective led to multiple cycles of feed forward of interests on considered programmes and feed back of programmes on considered interests. Based on these findings, we argue that studies should acknowledge this nonlinear, idiosyncratic and iterative nature of the choice process (see also Akkerman and Bakker 2019; Taylor and Harris-Evans 2018), as the choice process is often still seen as a linear process or a process that becomes increasingly stable over time (e.g. Eccles and Wigfield 2002; Lent et al. 1994).

## Appendix

**Table 1** A translated version of the topic list that was used to guide the interview

Section	Topic	Sub-topic	Main question	Prompt
Study choice	Choice + considered options	Options	Do you already know what you want to do next year?	What do you want to do? Can you explain a bit more about what you aim to do?
		Certainty	To what extent are you certain about your choice?	
		Gap year	Have you considered taking a gap year?	
	Process of choice	Searching	Which options did you consider over time?	Can you tell me a little bit more about each option?
		<i>Extra prompts</i>	Did you visit open days and student for a day days?	Which programmes did you visit?
			Are there options you wish to explore in the future?	
			Did you ever doubt what you wanted to do?	Where did you doubt between? Can you explain the doubt?
			How long do you already know what you wanted to do?	
			Did you have an idea of what you wanted to do before you had the idea of the current programme/gap year?	
		Reasoning	Can you explain why you aim to pursue this programme?	Can you explain that a bit more?
Are there other reasons why you want to pursue this programme?	Can you explain that a bit more?			
Interests and study choice	Interests in programmes	Importance of interest	Do you look for programmes that fit your interests, or do you think it does not matter that much?	Can you explain your answer?
		Interest in programme	Do you expect to spend time on an interest in the study programme?	Can you tell me more about that?
		Multiple interests	Do you expect to spend time on more interests in the study programme?	
		Consideration	Can you explain why you aim to pursue these interests and not others?	
			Do you have other interests that may play a role in your future?	
	Is it important for you that you can specifically pursue this interest/ these interests in a programme?			

**Table 1** (continued)

Section	Topic	Sub-topic	Main question	Prompt
	Other interests	Which interests	Do you have other interests that you currently have, but you did not mention yet?	Can you describe in more detail these interests?
		Interest in programme	Do you consider to pursue these interests in your current study?	Maybe in another programme? Can you explain why you do or do not consider to pursue them?
		Interest parallel to the programme	What interests do you aim to pursue outside of a programme?	Can you explain a bit more about how you will do that?
		Why not inside of a programme	Can you explain why you will not consider these interests in a programme?	

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