Characterizing adolescents' interest in and out of school

Understanding multiplicity and dynamics in persons, objects and contexts

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**Interesses van adolescenten binnen en buiten school
in kaart gebracht**

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van personen, objecten en contexten

(met een samenvatting in het Nederlands)

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TABLE OF CONTENTS

1

General introduction

INTRODUCTION

As already described in the early twentieth century (Arnold, 1906; Dewey, 1913), interest is a powerful phenomenon for learning and development, as well as important for making sustainable educational and career choices (Lent, Brown, & Hackett, 1994; Harackiewicz, Barron, Tauer, & Elliot, 2002; Holmegaard, Ulriksen, & Madsen, 2014). Adolescents who experience interest show high intrinsic motivation to learn and report high well-being over time (Schulz, Schulte, Raub, Disouky, & Kandler, 2018; Renninger & Hidi, 2017). Interest, a preferred engagement of an adolescent with a specific object, can pertain to anything in a person's life space, from an activity, topic, artefact, event, to an abstract idea (Krapp, 2000; 2002). Whereas younger children might have more universal interests, like playing and reading, interests become more specific during adolescence (e.g. reading Harry Potter), a process that contributes to adolescents' identity formation (Hofer, 2010; Krapp, 2002).

Despite recognition for the power of interest for learning and development, research has suggested that adolescents experience a lack of interest in school, experiencing high levels of boredom, low intrinsic motivation and negative affect (Larson & Verma, 1999; Pekrun, Goetz, Daniels, Stupnisky, & Perry, 2010). Researchers even report a general decline in academic interest from age 11 onwards (Hidi & Harackiewicz, 2000; Potvin & Hasni, 2014). This can be considered worrisome, as lack of interest in school has been associated with low academic engagement and achievement (Lumby, 2011; Pekrun et al., 2010). Yet, these findings were often the result of interest research building on cognitive-psychological theories, informing research and practice about average levels of interest in single, predefined objects of interest, often school-related (e.g. mathematics, chemistry; Krapp, 2002; Ufer, Rach, & Kosiol, 2017).

Recently, research guided by an ecological, life-wide approach has extended this single object, single context focus on interest by including out-of-school topics and activities (e.g. Barron, 2006; 2010; Azevedo, 2011; 2013; 2018; Akkerman & Bakker, 2019). Interests tend to evolve naturally from engagement in out-of-school topics and activities, triggering both intrinsic motivation and deep attention, and making adolescents aware of their preferences and talents (Csikszentmihaly & Larson 2014; Hofer, 2010; Kleiber, Larson, & Csikszentmihaly, 2014; Larson, 2000). Findings on life-

wide interest development have shown that individuals typically have *multiple* interests that they engage in with interest pursuits across *multiple* contexts in daily life, both in and out of school (Azevedo, 2011; 2013; Akkerman & Bakker, 2019; Bergin, 2016; Barron, 2006; 2010). Engaging in interests in and across multiple contexts in daily life is considered to be a dynamic process, as each situation provides specific opportunities and demands that may steer adolescents toward specific engagements (e.g. Hofer, 2010; Knogler, Harackiewicz, Gegenfurtner, & Lewalter, 2015; Tsai, Kunter, Lüdtke, Trautwein, & Ryan, 2008), although adolescents themselves may simultaneously seek opportunities for engagement in particular content in each situation (e.g. Barron, 2006; Hofer, 2010; Tsai et al., 2008).

In recognizing that adolescents can engage in parallel interests that are embedded in and constructed through interaction with daily life contexts, interest theory faces new challenges. This includes understanding of what these interests are and how adolescents engage with their objects of interest both in and across contexts and over time. The current thesis aims to develop such understanding, by using a smartphone-based, personalized experience sampling method for measuring all interests in daily life. This method allows to study adolescents' interest as part of daily life, thereby gaining knowledge not only about the interests that adolescents engage in across family, peer and school contexts, but also about how these interests are dynamically experienced over time. In turn, this will aid in gaining a holistic understanding of adolescents' interests in daily life and in providing indications on how engagement in these interests is embedded in routines and practices life-wide.

THEORETICAL FRAMEWORK

Historically, scholars defined interest as a predisposition to re-engage with a particular object, or a psychological state characterized by an affective component of positive emotion and a cognitive component of concentration (Hidi & Renninger, 2006; Renninger & Hidi, 2016, p. 16). Interest is also a product of continuous interaction between an individual and his or her environment (Hidi & Renninger, 2006; Krapp, 2003; Silvia, 2006). Typically, interest research has described the development of interest as an ongoing process that starts with the interest being triggered in a particular situation. This so-called situational interest may gradually develop into an interest pursued by the

individual (i.e. grow towards an individual interest, Hidi & Renninger, 2006). Persistent engagement with an object of interest over time depends on one's experiences with the object of interest, for example the attribution of value or positive feelings towards the object (e.g. Renninger & Hidi, 2011; Schiefele, 2009). Whereas situational interest reflects engagement in specific content at a particular point in time (i.e. a 'fleeting' interest), individual interest refers to a person's predisposition to re-engage with specific content. Different scholars have questioned characterizing interests by such a dichotomy, both on conceptual (Akkerman & Bakker, 2019; Azevedo, 2011; 2013; 2018; Barron, 2006) and empirical (e.g. Knogler et al., 2015; Tsai et al., 2008) grounds.

Scholars guided by a life-wide, ecological approach on interest have provided new insights into the complex nature of interest, together illustrating how interest is part of everyday life (e.g. Akkerman & Bakker, 2019; Azevedo, 2011; 2013; 2018; Barron, 2006; 2010; Bergin, 2016; Hofer, 2010). Basically, anything in daily life may trigger interest, being connected to the social, material and cultural opportunities that family, school and peer contexts provide for interest emergence and growth. Research has indicated that daily life might generate *multiple* interests, as adolescents spend time on a variety of daily activities, such as school and homework, but also activities in the domain of leisure, media, and socializing (Kleiber et al., 2014; Bassi & DellaFave, 2004). As each of these interests evoke willingness to dedicate time and effort to it in daily life, some competition between a person's interests may thus be expected (Akkerman & Bakker 2019; Hofer, 2010).

In addition to this multiplicity of interest, research from an ecological perspective has indicated that interests have the potential to extend initial time and place and may thus be experienced across contexts (e.g., Barron, 2006). Daily life of adolescents is typically built up of school and a variety of out-of-school contexts. Findings show that out-of-school events such as peer activities, clubs, competitions, museum visits, and fiction reading can originally spark an interest that is picked up afterwards in a school class or vice versa (Azevedo, 2011; Barron, 2006; Crowley & Jacobs, 2002). These sparked interests can be developed and maintained across various sites, creating particular 'lines of practice' (Azevedo, 2011). Different contexts may thus simultaneously promote or constrain interest experience in daily life, showing the importance of accounting for multiple contexts (Falk et al., 2016; Hviid, 2016). Moreover, interest research

from an ecological approach has also indicated that in moving throughout their daily lives, adolescents are active agents who relate to and experience their world in an idiosyncratic way (Akkerman & Bakker, 2019; Barron, 2006).

THIS THESIS

The studies that have indicated the importance of multiplicity of interests and contexts and person-object-context dynamics associated with engaging in interests (Akkerman & Bakker, 2019; Azevedo, 2011; 2013; 2018; Barron, 2006; 2010; Bergin, 2016) were typically small-scale. The current thesis builds on these studies in characterizing and gaining a detailed understanding of the multiple interests adolescents have, both life-wide (i.e. in and out of school) and life-long (i.e. in relation to vocational or occupational activities), as well as the extent to and ways in which these interests are experienced in and across contexts. Additionally, our aim is to characterize the interest-based dynamics that are involved with engaging in interests in daily life, in order to understand why adolescents sustain their interests over time. Understanding what adolescents experience as interesting as they move throughout their everyday lives is critical for both research and educational practice in supporting adolescents in their development of self. Such insight, moreover, adds to interest theory about specific dynamics between persons, objects and contexts in interest development.

MEASURING INTEREST IN DAILY LIFE

Pursuing these research aims requires a method that allows to monitor interest-driven experiences in adolescents' daily lives. First of all, this method should be able to measure interest in an *open-ended* form, as we want to capture interest as it is experienced and labelled by the adolescent, hence centralizing their perspective. Second, the method should be able to measure *multiple* interests, that is all interests that adolescents experience in their everyday lives. And finally, the method should be able to monitor the real-time, *momentary* interest experiences of persons throughout their everyday lives, thus from moment-to-moment, each time they engage with their object of interest. This aids in capturing how interest experience and development is dynamic and facilitated by daily life contexts.

In order to meet these 'conditions', we applied a personalized, smartphone-based experience sampling method (ESM), sometimes alternatively referred to as ecological momentary assessment (EMA) (Hektner, Schmidt, & Csiksentmihalyi, 2007). It is a relatively new method in psychological research that has only been used in interest research in small-scale studies before (e.g. Akkerman & Bakker, 2019), with the advantage of allowing intensive longitudinal measurement of activities or psychological constructs within daily life (e.g. Fahrenberg, Myrtek, Pawlik, & Perrez, 2007). Early ESM studies provided participants with an alarm to beep persons and required participants to report their ongoing activities using paper and pencil (Csikszentmihalyi & Larson, 2014). New smartphone technology allows for an easier and less intrusive form of such research, with Dutch adolescents nowadays already carrying and using smartphone devices on a daily basis.

ESM makes it possible to study adolescents as they go about their everyday lives and to measure experiences in a systematic and momentary way. Data is collected while adolescents engage with emerging or existing objects of interests, as they can report their interest experience 'real-time'. Interests are measured in a *momentary* way, asking participants to report on their real-time experiences, thereby preventing a recall bias as no retrospection on what they found interesting yesterday or last week is needed. And finally, *systematic* means that we sample a persons' *ongoing* interest experiences for a longer period of time (14 consecutive days), providing us with insights into the dynamics that may be involved with engaging in interest in daily life.

RESEARCH PROJECT DESIGN

The research project described in this thesis consisted of two part-projects (see Figure 1.1). The first project, reported on in **chapter 2,** was a questionnaire cohort study on the vocational interests of nine graders, completed around wave 2 of the second part project, an ESM-study (i.e. real-time data collection). The ESM-project was applied longitudinally over the course of 19 months, starting with a pilot wave in November 2015 to test the instrument for large-scale use. The first data collection wave was in February 2016 and the sixth and final wave was in June 2017. In **chapter 3**, we report on the data of the first wave, in **chapter 4** on data from four waves (i.e. wave 3-6) and in **chapter 5** we report on data from all six waves (i.e. wave 1-6).
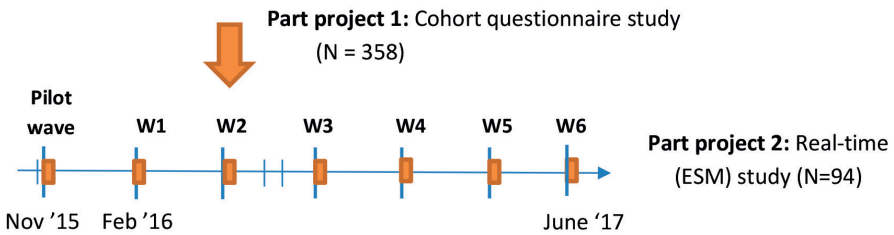
Part project 1: Cohort questionnaire study
(N = 358)

Part project 2: Real-time
(ESM) study (N=94)

Figure 1.1. Research project design

For the cohort project, we asked all ninth graders from higher general education and pre-university education in five different secondary schools, spread throughout the Netherlands, to fill out a questionnaire on their vocational interests in April 2016. The schools that participated in our project were recruited through advertisements in educational journals for practitioners. In total, 45% (*n* = 358) of all students of the participating schools responded, and 39% was boy. We chose to assess vocational interests in grade 9, as the end of grade 9 demarcates the transition to upper secondary school when adolescents have to make an educational choice as a preliminary step for choosing a postsecondary program. After lower secondary education (grade 7-9), students specialize in a particular combination of school subjects, called an 'educational track'[1], which they focus on during upper secondary education (i.e. grade 10-12). For more information we refer to the section "context of the research".

Four out of these five schools also participated in the ESM-project. One school only opted to participate in the cohort-project. For the ESM-project, we invited all ninth graders in each of the schools to participate, and 145 adolescents volunteered (20% of all ninth graders). A stratified sampling strategy based on school, class and gender was used to select the final sample (*n* = 94). The participants were offered financial compensation for taking part in the study and their parents were asked for informed consent. Over 75% (n = 69) of these adolescents participated till the end of the data collection, but thirteen of them had one wave missing, thus a total of 56 adolescents completed all real-time data collection waves. Hence, we followed these adolescents' interest experiences from the beginning of grade 9 towards the end of grade 10, with data collection being conducted every three months.

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1   In Dutch: 'profiel'. It is purposefully translated as 'track' and not as 'profile', in order to prevent confusion for the reader as in Chapter 2, we discuss 'vocational interest profiles' as well

DEVELOPMENT OF THE SMARTPHONE APPLICATION 'INTIN 2.0'

For the ESM study, we relied on a previously developed mobile application, called 'inTin', that was developed and applied in 2012-2014 by Sanne Akkerman and Arthur Bakker in a small-scale, longitudinal study on interest (reported on in Akkerman & Bakker 2019). In order to develop a version of the application that was ready to use on a large (research) scale, for example to make it downloadable from both the App- and Playstore, Akkerman, Bakker and the author of this thesis worked together with a team of ICT/application-developers at Utrecht University to design and develop inTin 2.0 (both Front-End and Back-End). The Front-End refers to the smartphone application itself (see Figure 1.2.1-1.2.4 in order to get a grasp of what the instrument looks like). With the Back-End, we mean the server that saves all participant data in a correct and systematic manner and is needed for large-scale analysis of the data.
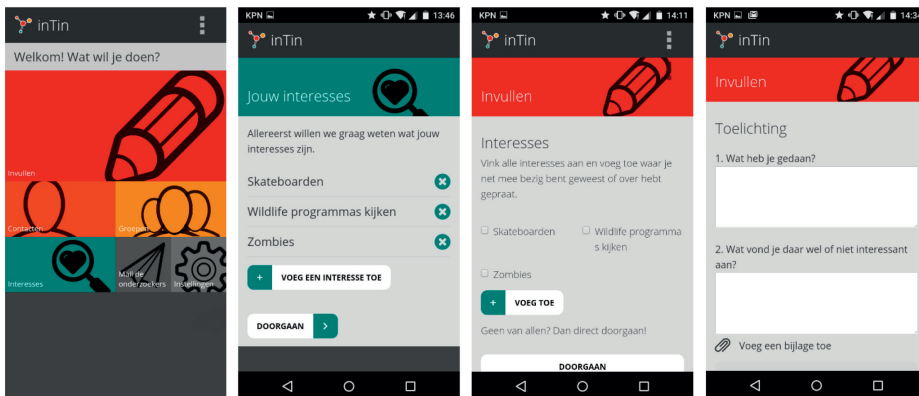
Figure 1.2. Selection of screenshots of the inTin application; starting screen, earlier mentioned interests, adding interests, and reporting an interest event

CONTEXT OF THE RESEARCH

The adolescents in our sample were students enrolled in higher general education and pre-university education. After grade 7-9 (lower secondary education) students in the Netherlands have to complete another two (higher general education) or three (pre-university education) years after they have chosen a particular educational track and before they transfer to research universities or universities of applied sciences.

Students can choose different educational tracks, or a combination of tracks (see Table 1.1). Whereas some school subjects are taught in all tracks, such as Dutch and English, education in the upper secondary school years in the Netherlands is specifically focused on preparing these students for the national exams in particular school subjects that they find interesting and might want to pursue or need in higher education. Also, not all higher education programs are admissible with all educational tracks, making it a consequential choice (as displayed in Table 1.1). Only the humanities, social and behavioral programs can be entered with all four educational tracks.

Table 1.1. *Overview of the educational tracks, the school subjects that these tracks specialize in, and the Higher Education (HE) programs that students cannot enter or only under certain conditions*

Educational track[c]	Specialization in following subjects for national exams	No admission/conditional admission for following HE programs
Culture and Society	Applied math, Modern languages, music or arts, history	[a]Chemistry, Math, Science, Computing Science, Medicine, Biology, Dentistry, Biomedical Sciences, Veterinary Science, Astronomy, Engineering
Economics and Society	Applied math, Economics, history	[a]Chemistry, Math, Science, Computing Science, Medicine, Biology, Dentistry, Biomedical Sciences, Veterinary Science, Astronomy, Engineering
Nature and Health	Biology and advanced levels of math and chemistry	[b]Medicine, Pharmaceutical Science, Veterinary Science, Biomedical Science, Dentistry, Computing Science, Math, Science, Astronomy, Engineering
Nature and Technology	Advanced plus levels of math, chemistry and physics	[b]Medicine, Veterinary Science, Biomedical Science, Dentistry
Science-Math	Advanced plus levels of biology, math, chemistry and physics	None

[a] no admission possible for these programs
[b] admissible if student also followed biology (Nature and Technology) or science or advanced plus levels of math (Nature and Health)
[c] in Dutch: de profielen Cultuur en Maatschappij, Economie en Maatschappij, Natuur en Gezondheid, Natuur en Techniek, en Natuur en Techniek met biologie

OVERVIEW OF THE CHAPTERS

This thesis contributes to the characterization of adolescents' multiple interests in and out of school, studying what life-long interests adolescents have (chapter 2) as well as how their life-wide interests appear across contexts (chapter 3). Moreover, we explore how adolescents experience their interests over time, specifically in relation to school (chapter 4) as well as more generally to what mechanisms sustain their interests (chapter 5).

In **Chapter 2** the following questions are asked: (1) *What combinations of vocational interests do secondary school students have and how are these different for boys and girls, and (2) how are these vocational interest profiles associated with adolescents' educational track choices and career image specificities?* In this chapter we explore the differentiation and nondifferentiation of adolescents' (358 grade 9 secondary school students) preferred engagements in vocational and occupational activities. Data was gathered using a questionnaire based on Hollands' RIASEC theory that is also often used in educational practice. We examine how realistic, investigative, artistic, social, enterprising and conventional interests *combine* into distinct interest profiles and how these can be associated with future-oriented decision-making. A mixed-method approach is used, where Latent Profile Analysis is applied in order to identify interest subgroups, and these subgroups are compared on the divergence in educational track choice and specificity of their 'career image'.

In **Chapter 3** we proceed in investigating the multiplicity of interest by taking a life-wide approach on interest, asking: *What multiple interests do adolescents report in daily life and to what extent are these continuous across family and peer contexts?* We regard interest as an experiential phenomenon that can be shared in and across contexts of daily life. We aim to investigate the multiple interests that adolescents experience in daily life, as well as the extent to which interests are experienced in or across contexts in daily life (i.e. multiplicity of contexts). Data was gathered of 42 adolescents by using the smartphone application 'inTin' as experience sampling method.

In **Chapter 4,** we question adolescents' reported lack of interest in school and aim to present an extended and more nuanced understanding than previously described of

the role of school in adolescents' interest experiences in daily life. The question asked in this study is: *How is school reflected in adolescents' interest experiences in daily life?* We explore 7239 interest experiences reported by 44 adolescents across four data collection waves, together representing one school year (2016-2017), on the ways they refer to school in their interests in daily life. We aim to investigate how school can play a role in interest in different and idiosyncratic ways.

In **Chapter 5** we aim to unravel the mechanisms that may be associated with interest sustainment (*What mechanisms sustain adolescents' interest?*), that is persistent engagement with an object. Thereby, we aim to take a first step towards explaining how interests *develop* as part of daily life. We included all adolescents that completed our six data collection waves into the analysis. Eventually, this meant that we analyzed 334 sustained interests of in total 56 adolescents with their 8281 reported interest events. We aim to explore beyond the explicit reasons that individuals provide for interest sustainment.

Chapter 6 is the closing chapter of this thesis, and not only tries to synthesize the empirical findings but also discusses limitations of the thesis, suggestions for future research as well as lessons for secondary school practice.

In sum, this thesis focuses on characterizing adolescents' multiple interests life-wide (chapter 2 and 3), and on examining daily life dynamics of interest experiences over time (chapter 4 and 5).

CHAPTER

2

Vocational Interest Profiles in Secondary School: Accounting for Multiplicity and Exploring Associations with Future-Oriented Choices

ABSTRACT

Secondary school students in the Netherlands already face future-oriented decisions about their educational careers, which are expected to be informed by their interests in specific vocations or occupations. However, vocational interest assessment tools generally do not account for the possibility that students are interested in multiple vocational domains, potentially challenging students' future-oriented decision-making processes. The present study examines the different combinations of vocational interests that secondary school students have and explores how the both differentiated and nondifferentiated character of these interests' structures is associated with students' educational and career-oriented decision-making processes. A latent profile analysis on six realistic, investigative, artistic, social, enterprising, and conventional interests revealed seven distinct vocational interest profiles across a sample of 358 Grade 9 students, of which 40.8% had a nondifferentiated interest structure (i.e., a low, neutral, or broad vocational interest) and 59.2% had a differentiated interest structure (i.e., a social dominant, enterprising–conventional dominant, realistic–investigative dominant, or artistic–social– enterprising dominant interest). This finding shows that many secondary school students show similar levels of interest across different vocational activities. Additionally, associations between the differentiated and nondifferentiated structure of these profiles and students' educational track choices and career image specificities were examined. Our results extend prior work by showing that having a nondifferentiated interest structure does not necessarily mean that students are more uncertain about their educational or career choice. We suggest that future research can further explore the associations between vocational interest structures and future-oriented decisions.

Keywords: vocational interests, RIASEC interests, latent profile analysis, secondary school students

INTRODUCTION

In secondary schools in the Netherlands, students who are 14 to 15 years of age are faced with future-oriented decisions about their educational careers. Such decisions are expected to be informed by the students' interests in particular vocational or occupational activities (Nauta, 2010). However, research suggests that young students may be interested in multiple vocational domains and that these students' vocational interests might substantially develop over time (Swanson, 1999; Holland, 1997). If students are still thinking about who they are as people and who they want to become based on their vocational interests, defining oneself in a future context and choosing a direction for life after secondary school can be challenging (Den Boer & Guldemond, 1996; Holmegaard, 2015; Holland, 1997; Sharp & Coatsworth, 2012; Lent, Brown, & Hackett, 1994). It might be problematic that the vocational interest assessment tools that are used in secondary schools to assist students in their decision-making process generally do not account for the possibility that students may be in a process of developing their vocational interests (Sung, Cheng, & Hsueh, 2017). Instead, the vocational interest theory upon which most of these instruments are based assumes that each student has differentiated interests that correspond to particular personality traits (Holland, 1997).

The present study seeks to gain insight into the different combinations of vocational interests that secondary school students show and how the differentiated and nondifferentiated character of these interest structures is associated with students' educational and career-oriented decision-making processes. More specifically, and in line with other recent studies on vocational interests (McLarnon, Carswell, & Schneider, 2015; Leuty, Hansen, & Speaks. 2016; Perera & McIlveen, 2018), a person-oriented approach was used in order to characterize how students' multiple vocational interests combine into distinct vocational interest profiles. Below, we give a short summary of the theory on vocational interest and the shift that has been made from variable-oriented to person-oriented thinking in the domain of vocational interest theory.

Vocational interest theory

Holland's (1997) theory on vocational interest is dominant in the field of vocational counselling, describing how individuals are thought to have six possible types of

vocational interests: realistic, investigative, artistic, social, enterprising, or conventional (RIASEC). Individuals classified as "realistic" generally prefer physical activities, working with their hands or machines. Individuals classified as "investigative" prefer activities that involve logical thinking, such as solving problems in math or science. "Artistic" individuals are those that mainly express themselves through acting, dancing, or creating things. Individuals with predominant "social" interests like to work with other people and help others. Individuals categorized as "enterprising" also like to work with others, but they prefer activities such as sales or others with which they can manage or lead people/teams. Finally, "conventional" types prefer routine-based activities, such as administrative work.

The six types are considered to represent stable trait-like individual characteristics that influence behavior through preferences for particular vocational or occupational activities (Van Iddekinge, Putka, & Campbell, 2011, p 14). Importantly, these RIASEC interests are positioned along the vertices of an equilateral hexagon (i.e., with a circumplex structure), where Hollands' theory assumes that adjacent interest types along the axis of this hexagon correlate more strongly (e.g., R-I, I-A, A-S) than interest types with relatively further distances between one another (Holland, 1997; Nauta, 2010). For example, the higher people score on social vocational interests, the lower they are expected to score on realistic vocational interests, as these are juxtaposed in the hexagon. Prediger's model (1982), with two bipolar dimensions (people-things and data-ideas) is often presented as underlying the six RIASEC dimensions (e.g., Rounds & Tracey, 1993). These dimensions (people-things and data-ideas) are said to be mutually exclusive: if an individual is interested in working with people (social type), then he or she cannot be interested in working with things (realistic type), and if an individual is interested in working with data (conventional type), then he or she cannot be interested in working with ideas (investigative type).

In summary, the theory behind the RIASEC model proposes that individuals can be "typified" in a unidimensional way, meaning that the higher they score on one dimension, the lower they score on another dimension (Nagy, Trautwein, & Lüdtke, 2019; Nauta, 2010). Based on this model, different tests have been developed that are administered in secondary schools worldwide to help individuals gain insight into their vocational interests and advise them on the direction to take based on these interests

(e.g., in Asia, [Sung et al., 2017]; in Europe, [Hirschi, 2009]; in U.S.A; [Falco & Steen, 2018]). Individuals often receive a three-letter code (e.g., RIA) after taking such a test, of which the first letter in particular determines what educational choice might fit their personality (Armstrong, Fouad, Rounds, & Hubert, 2010). However, as we argue below, this way of counselling students does not take into account the multiplicity of vocational interests, which has been a source of debate in the literature for the past few years (e.g., McLarnon et al., 2015).

Multiplicity of vocational interest

In recent years, discussions in studies and career counselling literature have emerged regarding the multiplicity of vocational interest structure, reflecting a broader trend from variable to person-oriented approaches in investigating vocational interests (e.g., McLarnon et al., 2015). These discussions acknowledged that individuals may combine multiple vocational interests, which may also translate to different simultaneous vocational directions in terms of RIASEC. Previous research on vocational interests has not accounted for this multiplicity, as these studies have focused on describing relationships among the RIASEC variables (i.e., variable-oriented approach). Tay, Drasgow, Rounds, and Williams (2011) were the first to show that individuals can be interested in people (e.g., social) and things (e.g., realistic), thereby bringing the bipolarity principle of the RIASEC model into discussion, triggering further studies to investigate how individuals' interests may combine into distinct profiles (e.g., McLarnon et al., 2015; Leuty et al., 2016). Thus, a switch was made from a variable-oriented to a person-oriented approach on vocational interests, in which individuals are seen as "functioning wholes" and combinations of interests are considered unique to individuals or groups of individuals (Bergman & Trost, 2006; Von Eye & Bogat, 2006). Such a person-oriented approach allows one to trace the heterogeneity across interests of individuals, thus showing how individuals may differ not only in level of interest (low, moderate, high) but also in their combinations of interests (e.g., high interest in the realistic domain, low interest in other domains). In this study, we align with this movement by studying quantitative (level) and qualitative (combinations) differences in vocational interest structures across individuals.

Latent Profiles of Vocational Interests

Latent profile analysis (LPA) is typically used to categorize individuals into quantitatively and qualitatively distinct subgroups that have similar patterns of responses, thereby also being able to model how interests are interrelated (Morin, Morizot, Boudrais, & Madore, 2011). It differs from regular cluster analysis in that it can detect latent or unobserved patterns between variables (i.e., heterogeneity) rather than observed variables (i.e., assuming that different subpopulations can be found across individuals) based on an observed set of variables. Next, the results described by previous studies that have used LPA with vocational interests in mainly college student samples will be discussed.

McLarnon et al. (2015) were the first to use a multivariate, person-oriented approach by applying LPA, providing more insight into the RIASEC interest patterns that might exist across individuals. These authors identified eight distinct interest profiles across college students. They found six profiles that were differentiated, with high scores on some dimensions, namely (a) realistic-artistic-conventional dominant, with individuals scoring relatively high on these dimensions; (b) investigative-dominant; (c) realistic-investigative-artistic; (d) entrepreneur, with high scores on the enterprising domain; (e) artistic-dominant; and (f) conventional business, with high scores on both the enterprising and conventional domains. They also identified two nondifferentiated profiles, which they labelled as (g) disinterested, with low scores on all interest domains and (h) neutral, with similar scores around the mean on all interest domains. Several of these profiles also emerged in Leuty et al.'s (2016) analysis of vocational and leisure interests of college students. In total, they identified six distinct profiles. The most prominent difference with findings of McLarnon et al. (2015) was the identification of a social dominant profile, including mostly women. Perera and McIlveen (2018) also identified six profiles in a sample of college students that were similar to profiles identified in prior work, with four differentiated and two nondifferentiated profiles (i.e., low and high interested individuals). Together, these studies show how quantitatively and qualitatively distinct vocational interest structures exist in college students' interest profiles.

To our knowledge, only one previous study has looked at the vocational interest structures of secondary school students with a similar person-oriented approach

(Sung et al., 2017). This study has shown that almost half of the students (44%) in their sample was classified as having a nondifferentiated interest profile. As a result of having nondifferentiated interests, Perera and McIlveen (2018) stated, similarly to Tracey and Darcy (2002), that these students might "experience considerable career decision-making difficulty and greater career indecision" (p 95). The present study adheres to the proposition of Perera and McIlveen (2018) to examine decision-making difficulty by studying the differentiation in the vocational interest profiles of secondary school students using LPA and subsequently exploring how these profiles are associated with their future-oriented decision-making processes.

Vocational interest differentiation and future-oriented choices

Research suggests that students with differentiated interest profiles may be more decisive on their future careers (e.g., Hirschi & Läge, 2007; Hirschi, 2009) and more likely to choose specific higher education programs (e.g. Larson, Wu, Bailey, Borger, & Gasser, 2010; Passler & Hell, 2012; Ralston, Borgen, Rottinghaus, & Donnay, 2004). Reports show that students with greater realistic interests may be more likely to choose technical and engineering programs than other students, and students with greater investigative and enterprising interests are said to be more prone to choosing math and science programs than other students. Students who score high on the conventional dimension might choose an educational program in computing or information technology. In contrast, individuals with high levels of social or artistic interests are less likely to choose math and science programs. Hence, these associations between interest and choice behavior indicate linearity, whereas linearity can be questioned based on the assumption that individuals might also show similar levels of interest in multiple vocational domains.

According to vocational interest research, students whose vocational interest structures deviate from the RIASEC circumplex structure (e.g., showing high interest on non-adjacent domains, such as realistic and social) are less determined in their educational choices than students with interests in adjacent domains (Tracey & Darcy, 2002; Tracey, 2008; Tracey, Lent, Brown, Soresi & Nota, 2006). Tracey et al. (2006) also showed that high school students adhere to the RIASEC circumplex structure more than middle school students and are also more certain about their future-oriented choices. Experiencing difficulties in making educational choices might also apply to students with nondifferentiated interest structures (Hirschi & Läge, 2007), as these students

show lower or higher levels of interest in all vocational domains simultaneously and thus deviate from the assumptions underlying the RIASEC model.

Moreover, vocational interests have been previously described to be different for boys and girls, whereby boys on average score higher on the realistic domain and girls score higher on the social domain (e.g., Tracey & Robbins, 2005; Su, Rounds & Armstrong, 2009). Nondifferentiated interest structures are found to be more common among boys (Leuty et al., 2016; Sung et al., 2017), and girls on average tend to show higher levels of interest differentiation during adolescence (Hirschi, 2009; Fouad & Mohler, 2004).

These findings with regard to secondary school students' interest structures contrast with counselling practices in secondary schools not only in the Netherlands but also, for example, in Asia (Sung et al., 2017) where vocational interest assessment tools based on the RIASEC circumplex structure are used to guide students in their decision-making processes (Holland, 1997). Not taking into account multiplicity and developing interest structures in educational counselling might be especially worrisome if students already have to make future-oriented decisions at an early age, such as in the Netherlands. Dutch students at the end of grade 9 have to opt for an educational track (a combination of specific school subjects) as a preliminary step for choosing a higher education program (Nuffic, 2019). After choosing such a track, they specialize in particular school subjects during upper secondary school (grades 10–12, see Method section). As students with nondifferentiated vocational interests might be exploring a wide variety of future options and thus not have a singular or specific image of their desired career (Den Boer & Guldemond, 1996), this study explores whether students with differentiated and nondifferentiated interest profiles are different in educational decision-making and career image specificity.

The present study
Our aim is to contribute to theory on vocational interest structures in secondary school students, by providing more insight into the different combinations of vocational interests that secondary school students show. More specifically, we expect to find vocational interest profiles with both a differentiated and nondifferentiated character, with a higher extent of nondifferentiation compared to what prior research reported on college student samples (e.g. McLarnon et al., 2015; Leuty et al., 2016; Perera &

McIlveen, 2018). In relation to their future-oriented decision-making processes, we expect that secondary school students with differentiated interests make more specific educational track choices in line with their interests and are also expected to express more specific career images (i.e., what job they would like to have as adults) than students with nondifferentiated interests. For counselling practice, findings of our study might inform study counsellors on their future use of vocational interest assessment tools based on RIASEC, for example regarding how to guide students with differentiated and nondifferentiated interests in their decision-making process. We seek to answer the following two research questions:

1. what combinations of vocational interests do secondary school students have and how are these different for boys/girls?
2. how are these vocational interest profiles associated with students' educational track choices and career image specificities?

METHOD

The Dutch educational system: educational track choice

In the Dutch educational system, students are enrolled in educational levels according to their ability from age 12 onwards. In this study, we focus on the levels of higher general education and pre-university education. At the end of grade 9, when these students are approximately 15 years of age, they have to choose an "educational track," which is a combination of school subjects that prepares them in the last two or three years of their upper secondary education for particular higher education study programs. Students have to complete another two (for higher general education) or three (for pre-university education) years after they have chosen a particular educational track and before they transfer to research-based universities or universities of applied sciences.

Students can choose the tracks culture-society, economics-society, nature-health, and nature-technology or a combination of these tracks, for example nature-health and nature-technology (i.e., a science-math-based track). In the tracks nature-technology and nature-health, students prepare for their national exams in advanced mathematics, chemistry, and physics, whereas nature-technology students spend more time on these topics than nature-health students, who also follow an advanced grade in biology (see Table 2.1). The culture-society and economics-society tracks consist of applied

mathematics, history, economics (economics-society), and modern languages and music or arts (culture-society). Some school subjects are taught in all tracks, such as Dutch and English. Education in the upper secondary school years in the Netherlands is specifically focused on preparing students for the national exams, in particular for school subjects that are part of their track, but their educational choice also has consequences for the programs they might want to pursue in higher education (see also Table 2.1). Not all higher education programs are admissible for all tracks.

Participants

The participants were 358 lower secondary school students from grade 9 of four different schools in the Netherlands. All grade 9 students (i.e., 14–15 years of age) enrolled in higher general education and pre-university education at these schools were asked to participate in the study, of whom eventually 45% filled out the questionnaire (39% were boys). This low representation of boys reflects the population in the participating schools[1], where 44% was girl and 31% was boy, with the sex of the remaining 24% unknown. In total, 62% of the girls enrolled in these educational levels at the participating schools filled out the questionnaire, and 56% of the boys.

The data were gathered in April 2016, around the time that students had to choose an educational track in upper secondary school education (i.e. grades 10 to 11 or 10 to 12). All students participated in this study voluntarily. In accordance to school protocols concerning student participation in research, parents and caretakers were informed by the schools about the content of this study and were assumed to give consent if they did not express any objection to their children's participation. Ethical approval for this study was received from the ethical review board of the Faculty of Social and Behavioral Sciences of Utrecht University. (FETC15-045).

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1   And also reflects the Netherlands in general, where there appears to be a small overrepresentation of girls in the higher general education and especially pre-university education levels (Inspectorate of Education, 2019).

Table 2.1 *Overview of the Educational Tracks, the School Subjects That These Tracks Specialize in, and the Higher Education (HE) Programs That Students Cannot Enter or Under Certain Conditions*

Educational track	Specialization in subjects	No admission/conditional admission for following HE programs
Culture and Society	Applied math, Modern languages, music or arts, history	[a]Chemistry, Math, Science, Computing Science, Medicine, Biology, Dentistry, Biomedical Sciences, Veterinary Science, Astronomy, Engineering
Economics and Society	Applied math, Economics, history	[a]Chemistry, Math, Science, Computing Science, Medicine, Biology, Dentistry, Biomedical Sciences, Veterinary Science, Astronomy, Engineering
Nature and Health	Biology and advanced levels of math and chemistry	[b]Medicine, Pharmaceutical Science, Veterinary Science, Biomedical Science, Dentistry, Computing Science, Math, Science, Astronomy, Engineering
Nature and Technology	Advanced plus levels of math, chemistry and physics	[b]Medicine, Veterinary Science, Biomedical Science, Dentistry
Science-Math	Advanced plus levels of biology, math, chemistry and physics	None

[a] no admission possible for these programs.
[b] admissible if student also followed biology (nature and technology) or science or advanced plus levels of math (nature and health).

Instruments

Vocational interest

We used a translated version of the German *Allgemeinen Interessesen-Struktur-Test-revised* (AIST-r), containing 60 items, 10 for each of the six Holland interest dimensions (Bergmann & Eder, 2005). This instrument is most frequently used in German-speaking countries, but translated versions are also applied in the Dutch secondary school system to advise students in their educational choices. Each item described an occupational activity (e.g., investigating how something works, writing stories, working with machines, or technical devices), and participants were asked to state how interested they were in each activity on a 5-point Likert scale (1 = not at all to 5 = very much). Example items can be found in Table 2.2.

The test was translated to Dutch by the first author of this study, with a formal consent of the German publisher of the AIST-r. After the translation, a fellow researcher in

our department, who is a native German speaker, back translated the items in order to check if the translation by the first author was adequate. Minor suggestions were made for improvement. Consequently, a pilot study was performed with 57 students from the pre-university level of grade 10 of one of the participating schools in order to test whether the items were comprehensible. In addition, the first author made an audio recording of how three randomly chosen students filled out the questionnaire by "thinking aloud," which involves making notes when they had trouble understanding the item. Minor changes were made after the pilot study, for example by adding clarifying examples to the items (e.g., working with a word processor program, *such as Microsoft Word*).

Table 2.2 *Scales, Cronbach's Alpha, and Exemplary Items of the Dutch Version of the Allgemeinen Interessesen-Struktur-Test-Revised for Each Interest Dimension*

Interest dimension	α	Exemplary item
Realistic	.79	"Constructing something of metal/wood"
Investigative	.78	"Performing experiments in a lab"
Artistic	.78	"Reading poems and literature and interpreting them"
Social	.87	"Give advice to other people"
Enterprising	.79	"Leading a team"
Conventional	.79	"Making up a data file or processing data"

Note. Exemplary items are translated from Dutch.

For the analysis, we used the added scores of the 10 items for each scale, indicating someone's means interest in the RIASEC interest domain. In our sample, the coefficient alpha reliabilities were uniformly acceptable, as depicted in Table 2.2. The German manual provides information on the reliability and validity of the instrument; the scales have repeatedly been shown to be highly reliable, as the authors (Bergmann & Eder, 2005) reported alphas ranging from .82 to .87, which are comparable to the alphas in Table 2.2 and strongly correlate with other interest measures based on the RIASEC dimensions (e.g., self-directed-search, Jörin, Stoll, Bergmann, & Eder, 2004).

Educational track choice, career image, gender
In addition to presenting the students with the vocational interest questionnaire, we asked them the following question about their educational track choice: "What educational track did you choose?" In response, they could indicate "1. culture-society,"

"2. economics-society," "3. nature-health," "4. nature-technology," "5. different," and "6. no idea." After looking through the data, we found out that all students who selected "5. different" chose a combination between the nature-health and nature-technology tracks (a science-math-based track). We also asked students at the end of the vocational interest questionnaire the following question about their career image: "What do you want to be when you grow up?", and to indicate whether they were a boy or a girl.

Data Analyses

Latent Profile Analysis

The analyses for the current study were performed in M*plus* 8.0 (Muthén & Muthén, 2017). We conducted an exploratory LPA using a robust maximum likelihood estimator (MLR). Our decision to take an exploratory and not a confirmatory approach towards LPA was made based on the argumentation that previous studies (McLarnon et al 2015; Leuty et al 2016; Sung et al 2017; Perera & McIlveen, 2018) reported different results, as well as that our study is focused on a younger age group. We did use the results of previous papers to decide on trying to fit models ranging from 1 to 10 latent profiles. LPA is a person-oriented, statistical modelling technique that aims to uncover unobserved heterogeneity (i.e., latent profiles of vocational interests) in a population (i.e., grade 9 students) by grouping individuals into meaningful profiles based on the similarities in their responses (Nylund et al. 2007, Muthén, 2004). Unobserved heterogeneity means that these profiles must be inferred from the data and cannot be observed (i.e., making them latent profiles). Specifically, LPA can capture the complex interaction of multiple vocational interests and is thus regarded as a suitable method for analyzing vocational interest data as little knowledge exists on the constellation of the RIASEC interests across secondary school students (e.g., McLarnon et al., 2015).

In determining the optimal profile solution, an inclusive approach was used, involving an evaluation of several statistical fit indices and the interpretability of the profiles in the models. First, we looked at the information criteria provided for each model that we fitted, including the Bayesian information criterion (BIC), the sample-adjusted BIC (aBIC), and the Akaike information criterion (AIC). For deciding on the number of profiles (k), we focused on the BIC, as this information criterion is regarded as the best performing (Nylund et al., 2007; Morgan, 2015). For transparency reasons, we also reported the other indices in Table 2.4. Lower values indicate better fit. A bootstrap

likelihood ratio test (BLRT) was consequently used to test a k-profile model against a k-1 profile model, where a non-significant p-value indicates that the k-model does not fit better than the more parsimonious model k-1. Therefore, we then decided to retain the k-1 model (Nylund et al., 2007). In addition to these statistical indices, we looked at the entropy values for the different model solutions. A higher entropy (varying between zero and one) indicates higher classification accuracy, which is traditionally reported as the effect size for latent class analyses (Granado, 2015). A value of 0.8 or higher is generally regarded as an acceptable class separation (Tein, Coxe, & Cham, 2013). Finally, the interpretability and size of the profiles was taken into account for deciding on the optimal solution, where very small proportioned classes (consisting of < 2% of the individuals) were regarded as less desirable.

After testing the models and deciding on the optimal profile solution, we included sex and educational track choice as auxiliary variables into the model in order to examine if profile membership was related to these variables (i.e., using the DCON and DCAT function in M*plus*; Asparouhov & Muthén, 2014; Lanza, Tan, & Bray, 2013). This function provides equality χ^2 tests of class-specific means or probabilities of the distal outcome across the latent profiles without including the outcome directly in the LPA model, thereby assuring stability of the initial profile solution (Marsh, Hau, & Wen, 2009). Post-hoc comparisons between class-specific means and probabilities were also done to explore whether interest profiles differed in proportion between boys/girls and educational track choice. Odds ratios were reported as magnitude effects of the class-specific probabilities.

Qualitative analysis on career image
We performed a directive content analysis (Hsieh & Shannon, 2005) on the answers to the question "what do you want to be when you grow up?" in terms of specificity, as we wanted to explore if students with nondifferentiated interest structures are also less specific about their career images. All answers with a reference to indecisiveness (e.g., "I don't know what I want to do" or "I have no idea") were given a code 1; all answers with a reference to a broader occupational field (e.g., "I want to do something with economics") received a code 2; and all answers referring to a specific career (e.g., "I want to be a neurosurgeon") were a given code 3. In total, 18 students were left out of the analysis because their data related to this question were missing,

RESULTS

Table 2.3 displays the correlations among the RIASEC interest dimensions.

Table 2.3 *Descriptive Data (i.e., Correlations) for Each Interest Dimension*

Interest dimension	1	2	3	4	5
1. Realistic					
2. Investigative	.72**				
3. Artistic	- .01	.03			
4. Social	- .27**	-.06	.42**		
5. Enterprising	- .02	.00	.30**	.39**	
6. Conventional	.20**	.25**	.21**	.21**	.60**

** $p < .01$

A number of LPA solutions were calculated using an exploratory approach, moving up from one to 10 profiles. We initiated a single-profile solution because we wanted to test whether a general interest factor could be underlying the RIASEC indicators (Tay et al, 2011; Johnson and Bouchard, 2009), since such a factor may explain covariances between the indicators that should be attributed to the differences between the subgroups. Hence, the existence of such a general factor might violate the assumption of conditional independence that is associated with performing an LPA. However, we did not find a single-profile solution to fit the data.

Table 2.4 presents the results of our LPAs (i.e., depicting fit indices of the two–eight profile solutions). Examining the fit indices across the solutions, we determined that a seven-profile solution was optimal. The BIC value was the lowest (BIC = 14495), and a significant BLRT p suggested improvements of model fit from two to seven profiles, but the eight-profile solution was not a better fit than the seven-profile solution at the $p < .01$ level. Although our model fit results show that the eight-profile solution had a higher entropy, this solution consisted of two very small profiles (11 and 14 individuals). These profiles appeared not qualitatively different from the other profiles, making interpretability more difficult than for the seven-profile solution. The entropy of the seven-profile solution is also higher than 0.80, which is deemed acceptable as argued in the method section. Finally, the posterior probabilities for the solution (i.e., the mean probability of classification into a particular subgroup, ranging from 0 to 1), as

displayed in Table 2.5, were high, indicating that the different profiles are distinct from each other and that individuals classified into a profile actually constitute a separate vocational interest profile. Given these data, we thus decided that the seven-profile solution was optimal. Figure 2.1 visualizes the means of the different profiles, which are also depicted in Table 2.6.

Table 2.4 *Latent Profile Analysis Model Fit Statistics.*

Classes	AIC	BIC	aBIC	Entropy	Log likelihood	BLRT p
2-class	14650	14724	14663	.76	7306	.000
3-class	14489	14590	14508	.78	7218	.000
4-class	14412	14540	14436	.81	7173	.000
5-class	14369	14524	14397	.80	7144	.000
6-class	14325	14508	14359	.80	7115	.000
7-class	14286	14495	14324	.81	7089	.000
8-class	14272	14508	14315	.83	7077	.012

Note. AIC = Akaike information criterion; BIC = Bayesian information criterion, aBIC = sample-adjusted BIC, BLRT = bootstrap likelihood ratio test.

Table 2.5 *Classification Posterior Probabilities for the Seven-Profile Solution*

Profile	1	2	3	4	5	6	7
1	**.89**	.04	.01	.02	.00	.00	.00
2	.09	**.88**	.04	.00	.05	.03	.00
3	.00	.01	**.82**	.00	.04	.02	.01
4	.01	.00	.00	**.81**	.00	.04	.00
5	.00	.03	.08	.00	**.84**	.02	.07
6	.00	.04	.05	.17	.06	**.88**	.03
7	.00	.00	.01	.00	.01	.01	**.89**

Note. Boldfaced numbers indicate the mean probabilities for being classified into a profile.

Interpretation of the seven interest profiles

We assigned a label to each of the seven profiles depicted in Figure 1. Profile 1 (*n* = 40) was labelled as "low vocational interest," as its members demonstrated low means on the RIASEC dimensions. Profile 2 was named "social dominant" (*n* = 82), as high scores on the social dimension dominated this profile. Profile 3 was labelled as "enterprising-conventional dominant" *(n* = 42), as high scores on the enterprising and conventional dimensions characterized this profile. Profile 4 was named "realistic-investigative

dominant" (n = 31), as its members demonstrated high scores on both the realistic and investigative dimensions and low scores on the other indicators. Profile 5 (n = 57) was labelled "artistic-social-enterprising dominant", with high scores on these three indicators. Profile 6 (n = 92) encompassed the largest number of individuals and was thought to represent individuals with "neutral vocational interest," indicated by average scores on all interest dimensions, whereas Profile 7 was labelled as "broad vocational interest" (n = 14), as individuals belonging to this profile had above average scores overall (in terms of the answering scale) and were thus broadly interested. In sum, students' vocational interests in this sample combined into both differentiated profiles, with individuals that were more interested in one, two, or three adjacent RIASEC domains specifically (59.2% were classified as social dominant, enterprising-conventional dominant, artistic-social-enterprising dominant, and realistic-investigative dominant) and nondifferentiated profiles, with students showing similar interest in three or more RIASEC domains (40.8% were classified as showing low, neutral or broad vocational interest). Table 2.6 displays the means and confidence intervals of the RIASEC domains across the profiles that we detected in the data.

Interest profile membership, sex, educational track choice

We continued our analysis by including "sex," and "educational track choice" as auxiliary categorical/continuous variables. Table 2.7 presents the statistical results of the analyses. The overall (Wald's) χ^2-test for the equality of means/probabilities was significant for both sex ($\chi 2$ (6) = 214.335, p < .001) and educational track choice ($\chi 2$ (30) = 2083970.739, p < .001), showing that individuals across the identified profiles differ on these variables. Below, we discuss the relational patterns that we identified across these auxiliary variables and the grouping indicators (i.e., RIASEC variables).
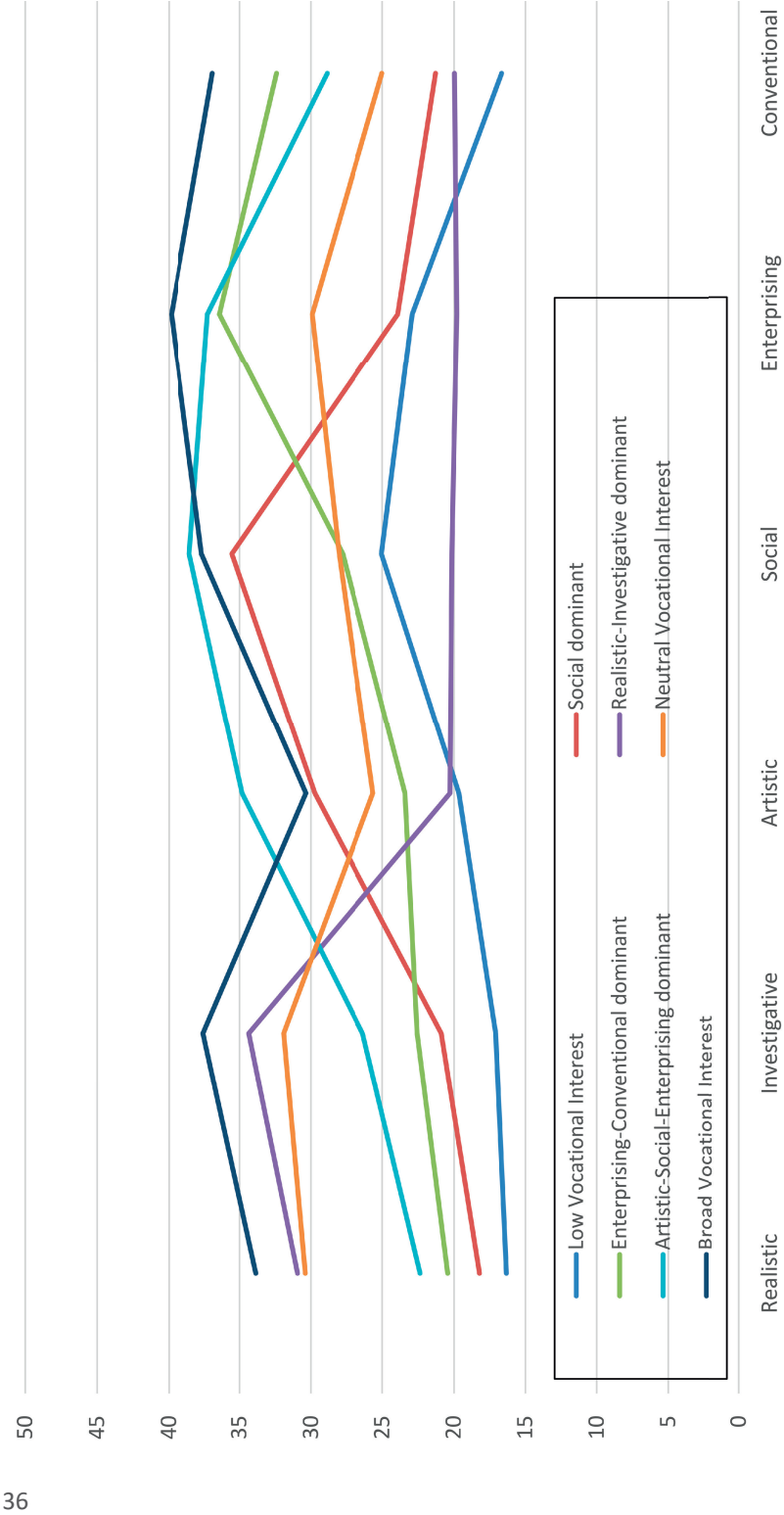
Figure 2.1. Estimated means of the RIASEC interest dimensions across the seven different vocational interest profiles.

Sex differences

Approximately one quarter of the girls in our sample (27.4%) were classified into a nondifferentiated profile, whereas for the boys this was almost two thirds (61.8%). In total, approximately one in two boys (45%) was classified to the Neutral Vocational Interest profile, showing no preferences for one RIASEC domain over another. The probability that an individual classified as such was a boy was 76%. Furthermore, in the realistic-investigative dominant profile, over 60% were boys. In contrast, girls were mostly classified as having social dominant interests (33% of all girls). Almost exclusively, this profile had girls classified to it (96%), as was the case for the artistic-social-enterprising dominant class (97%). These profiles did not differ significantly in proportion of girls and also did not differ from the broad vocational interest profile (where also 66% were girls). However, there were significantly more boys classified into the other profiles (i.e., the enterprising– conventional dominant, realistic–investigative dominant, and low, and neutral vocational interest profiles).

Educational track differences

Our results show that there was a higher probability that individuals classified under a differentiated profile chose a specific educational track compared to individuals classified under a nondifferentiated profile, who seemed more divergent in the educational track choices they made. In general, we found that the proportions of individuals with nondifferentiated interest profiles ranged across the educational tracks between 34% (students choosing a culture-society track) and 81% (students choosing the science-math track). This is probably due to the many individuals of the broad vocational interest profile choosing the science-math track (46%), which is characterized by its advanced science education.

Table 2.6. *Means and Variability Within Groups Shown by the Confidence Intervals (5–75%) for Each Interest Dimension*

Interest domains	All (minimum and maximum)	Low vocational interest (n = 40)	Social dominant (n = 82)	Enterprising-conventional dominant (n = 42)	Realistic-investigative dominant (n = 31)	Artistic-social-enterprising dominant (n = 57)	Neutral vocational interest (n = 92)	Broad vocational interest (n = 14)
Realistic	23.75	16.33	18.21	20.43	30.95	22.36	30.40	33.86
	10–46)	8.3–19.7]	10.2–21.5]	12.4–23.8]	22.9–34.3]	14.3–25.7]	22.3–33.7]	25.8–37.2]
Investigative	26.18	17.08	20.88	22.57	34.35	26.39	31.91	37.56
	10–47)	9.2–20.3]	12.9–24.1]	14.6–25.8]	26.4–37.6]	18.5–29.6]	24.0–35.2]	29.6–40.8]
Artistic	26.77	19.64	29.74	23.42	20.26	34.82	25.65	30.36
	10–49)	9.2–23.9]	19.3–34.2]	13.0–27.7]	9.8–24.5]	24.4–39.1]	15.2–29.3]	19.9–34.6]
Social	30.68	25.06	35.53	27.77	20.13	38.52	28.03	37.66
	10–50)	14.2–29.5]	24.7–40.0]	16.9–32.2]	9.3–24.6]	27.6–43.0]	17.2–32.5]	26.8–42.1]
Enterprising	30.40	22.91	23.92	36.40	19.80	37.24	29.91	39.83
	10–50)	14.9–26.2]	21.2–32.5]	28.4–39.7]	11.8–24.0]	30.0–40.5]	21.9–33.2]	31.8–43.1]
Conventional	24.79	16.67	21.28	32.41	19.95	28.86	25.03	36.90
	10–43)	10.3–19.3]	14.9–23.9]	26.1–35.0]	13.6–22.6]	22.5–31.5]	18.7–27.6]	30.6–39.6]

Table 2.7. *Equality tests of gender, and educational track choice (probabilities, odds ratios in parentheses) across the seven profiles.*

Auxiliary variables	Socially dominant		Enterprising-conventional dominant		Realistic-investigative dominant		Artistic-social-enterprising dominant		Low vocational interest		Neutral vocational interest		Broad vocational interest	
Gender	*b*		*ac*		*acd*		*be*		*a*		*acdf*		*abcdef*	
Boy	0.04 (0.03)	1.00	0.51 (0.19)	1.00	0.63 (0.15)	1.00	0.03 (0.03)	1.00	0.47 (0.12)	1.00	0.76 (0.10)	1.00	0.34 (0.18)	1.00
Girl	0.96 (0.03)	11.31	0.49 (0.19)	0.49	0.37 (0.15)	0.30	0.97 (0.03)	18.42	0.53 (0.12)	0.53	0.24 (0.10)	0.16	0.66 (0.18)	1.00
Educational tracks	*b*				*c*		*ab*		*a*		*cd*		*cd*	
Culture-society	0.33 (0.08)	1.00	0.02 (0.02)	1.00	0.00 (0.00)	1.00	0.16 (0.07)	1.00	0.12 (0.06)	1.00	0.04 (0.03)	1.00	0.00 (0.00)	1.00
Economics-society	0.22 (0.08)	0.18	0.95 (0.04)	17.75	0.00 (0.00)	0.00	0.35 (0.09)	0.57	0.48 (0.12)	1.05	0.15 (0.07)	0.94	0.00 (0.00)	1.00
Nature-health	0.39 (0.10)	0.00	0.00 (0.00)	0.00	0.28 (0.18)	0.83	0.27 (0.07)	0.00	0.29 (0.12)	0.00	0.28 (0.12)	0.00	0.32 (0.19)	1.00
Nature-technology	0.00 (0.00)	0.00	0.03 (0.03)	0.00	0.68 (0.20)	3.03	0.01 (0.04)	0.00	0.06 (0.04)	0.00	0.34 (0.15)	0.00	0.22 (0.20)	1.00
Science-math	0.03 (0.03)	0.00	0.00 (0.00)	0.00	0.04 (0.04)	0.08	0.12 (0.05)	0.00	0.00 (0.00)	0.00	0.17 (0.06)	0.00	0.46 (0.18)	1.00
No idea	0.03 (0.04)	0.14	0.00 (0.00)	0.00	0.00 (0.00)	0.18	0.09 (0.04)	0.70	0.04 (0.04)	0.50	0.02 (0.04)	0.58	0.00 (0.00)	1.00

Note. Similar subscripts for sex and educational track choice indicate that means across the profiles are equal, that the odds ratios are always 1 for the first category in each class, and that the odds ratios are always 1 for all categories of the last class (online tutorial; Muthén & Muthén (n.d.)).

The likelihood of choosing the culture-society track was highest for students classified under a social dominant profile (33%), who also had a high probability of choosing a nature-health track (39%). There was a tendency for students with an enterprising-conventional dominant profile to opt for the economy-society track (95%), and the students who were realistic-investigative dominant showed an overall tendency for choosing the nature-technology track (69%). Of the individuals with high scores on the artistic-social-enterprising dimensions, 35% and 28% opted for economics-society and nature-health, respectively. As can be deducted from Table 2.8, the probabilities for choosing specific tracks were more equally spread out for the nondifferentiated interest profiles, especially for the neutral vocational interest profile. The probabilities for choosing a specific track ranged between 15 and 33% in this group, with the exception of the culture-society track for which the probability for choosing was only 4%. For the group of students with lower scores on all dimensions (i.e., the low vocational interest profile), we found that the highest probability (48%) existed for choosing an economics-society track, although 29% chose a nature-health direction. No significant differences were found between groups for the low vocational interest profile and the social/enterprising-conventional dominant profiles, as well as for the broad vocational interest profile and the neutral vocational interest/artistic-social-enterprising profiles.

Career image specificity

An analysis of the career images of 340 students revealed that the largest proportion of students (42.1%, n = 143) was undecisive about their future careers (e.g., "I don't know what I want to do when I grow up, or what I want to study"). Approximately one third (31.2%, n = 106) had a broad idea about what they want to be (e.g., "something with animals" or "something technical"), and the smallest proportion of students (26.7%, n = 91) referred to a specific career (e.g., "A veterinarian for horses," "an accountant," or "a nurse"). In relation to the vocational interest profiles that were previously identified, we found that students with a nondifferentiated interest structure were not necessarily less specific about their career image than students with a differentiated interest structure (see Table 2.8). Almost 50% of the students who were classified as having broad vocational interest expressed a specific idea about what they wanted to do later in life.

Furthermore, almost half of the students with a low vocational interest had a broad idea about their future careers. In contrast, the Neutral Vocational Interest students were generally undecisive about their future careers. In addition, almost half of the students with a specific interest in the enterprising-conventional and the artistic-social-enterprising domains answered that they did not have a clear idea about their future careers, as well as over 30% and 40% of the realistic-investigative and social dominant individuals, respectively. Students who were classified as having a broad vocational interest were even relatively the most specific about what their vocations should be compared to all other subgroups.

Table 2.8 *Percentages of Students Who Expressed an Unclear, Broad, or Specific Career Image Across the Different Vocational Interest Profiles*

Vocational interest profiles	Unclear	Broad	Specific
Differentiated			
Social	38.96	33.77	27.27
Enterprising-conventional	48.72	30.77	20.51
Realistic-investigative	33.33	40.00	26.67
Artistic-social-enterprising	48.21	30.36	21.43
Nondifferentiated			
Low	32.50	45.00	22.50
Neutral	47.06	21.18	31.76
Broad	30.77	23.08	46.15

DISCUSSION

During secondary school, students already make future-oriented decisions (Germeijs & Verschueren, 2007). In the Netherlands, students even have to make a consequential educational choice at the end of lower secondary school (age 14–15) that impacts their potential access to higher education programs. Some educational tracks (i.e., nature-health, nature-technology, and especially the science-math based track) offer the possibility to access more and different programs than others (i.e., culture-society and economics-society). Yet, making such a choice might be challenging if students are exploring their interests in multiple vocational or occupational activities, as has been proposed in prior research (e.g., Tracey and Darcy, 2002; Perera & McIlveen, 2018). Secondary school students might show similar levels of interest across vocational domains, for example by showing nondifferentiated interest in all RIASEC domains

simultaneously (e.g., Tracey, 2008). At the same time, study and career counselling practices often use vocational interest assessment tools based on the assumption that all individuals have differentiated interest structures (e.g., high interest in realistic and a low interest in social).

The current study investigated this problem by providing insight into both the differentiation and nondifferentiation of secondary school students' vocational interest structures and how nondifferentiation might be associated with their future-oriented choices with regard to choosing an educational track and future career. We used a person-oriented approach to investigate what combinations of RIASEC interests students showed. With latent profile analyses we identified seven "vocational interest profiles" (i.e., subgroups) that reflect a combination of quantitative and qualitative differences across students in overall level of interest (i.e., low, moderate, high) and the shape (i.e., combinations of interests) of the profiles. Below, we first outline our results with respect to the different vocational interest structures that were identified (Research Question 1), after which we explain how a differentiated and nondifferentiated interest structure was associated with educational track choices and career image specificities (Research Question 2). Note that the latent profiles discussed below need to be interpreted as relative to the other profiles, in that for example if an individual scores high on all RIASEC domains (i.e., is classified to the broad vocational interest profile) this is always compared to the other students in our sample.

Our results of the latent profile analysis indicated that secondary school students possess combinations of interests with either a differentiated (59.2%) or nondifferentiated (40.8%) interest structure, showing differences across individuals both in level (i.e., high, moderate, and low) and in combinations of interests. We found that individuals with a differentiated interest profile were students characterized as social dominant, realistic-investigative dominant, enterprising-conventional dominant, and artistic-social-enterprising dominant, which are subgroups that have also been identified in prior work (McLarnon et al., 2015; Leuty et al., 2016; Sung et al., 2017; Perera & McIlveen, 2018). The nondifferentiated profiles included individuals with a low, neutral, or broad vocational interest. One in four girls and two out of three boys uniformly showed high, moderate, or low levels on all six domains, aligning with previous work on junior-high students by Sung et al. (2017), who found that 44.6% of the students did

not have pronounced interests in one domain over another, and they also reported that two or three times as many boys were classified into the nondifferentiated profiles. Other studies by McLarnon et al. (2015), Leuty et al. (2016), and Perera and McIlveen (2018) also found groups of college students who were characterized as having "nondifferentiated interests" but not as many as we or the study by Sung et al. (2017) on secondary school students found.

We can conclude from these findings that a large proportion of secondary school students shows a combination of vocational interest domains, indicating multiplicity. Our research confirms that interests in specific vocational or occupational activities may combine in more complex and interactive ways than are assessed by tools based on the RIASEC circumplex theory. As was stated by McLarnon et al. (2015) while studying college students, students with nondifferentiated interest structures may feel challenged in making future-oriented choices, as they are exploring multiple vocational interests and might not have a clear image of a specific career (see also Perera & McIlveen, 2018). However, as we discuss next, our results show no straightforward relationship between vocational interest and future choice-making.

We found that students who were classified under a nondifferentiated interest profile, especially the students with a neutral vocational interest, were more divergent in their choices than students with dominant interest in particular domains. More specifically, we found that the students with an enterprising-conventional dominant profile mostly chose the economics-society track, and the students with a realistic-investigative dominant profile a nature-technology track. Hence, these students chose an educational track that is coherent with their dominant vocational interest or interests and are prepared for higher education programs in line with these interests; the economics-society track prepares students for higher educational programs in management and economics, and the nature-technology track prepares students for technical and engineering programs. This coherency between interest and choice indicates that vocational interests of secondary school students do relate to educational choice, as it does for college students' choices of majors (e.g., Pässler & Hell, 2012), particularly for individuals with dominant interests in one or few domains.

At the same time, our findings indicate that a differentiated interest structure does not necessarily imply that students were also specific about their future career aspirations. We found that students with a dominant interest in the enterprising domain were relatively undecisive about their career aspirations, whereas students with a low or broad vocational interest more often reported to have broad or specific career aspirations. On the other hand, students with a neutral vocational interest in all RIASEC domains were relatively undecisive about their future careers, which is in line with what was posited by previous research on college students, showing that students who did not show a pronounced interest in adjacent RIASEC domains were generally more vocationally uncertain (Tracey & Darcy, 2002; Tracey, 2008). These findings show that students with nondifferentiated interest profiles do not necessarily experience more difficulty in thinking about their future career than students with a differentiated interest structure, which is opposed to what was posited by Perera and McIlveen (2018) based on their empirical findings.

Limitations

The results of this study need to be interpreted in light of some limitations. A first limitation concerns our reliance on the reliability and validity of the AIST-r to measure the RIASEC scales. Most prior research used a similar approach for constructing vocational interest scales (e.g. McLarnon et al., 2015). However, future research might consider building a measurement model in Mplus in order to deal with possible issues, such as items loading on multiple RIASEC indicators, similar to Perera and McIlveen (2018).

Secondly, the context of this study was quite specific, in that the Dutch educational system uniquely incorporates educational tracks into upper secondary education, where students specialize in particular combinations of school subjects in preparation for higher education. Although the profiles we found align with results from other studies, associations between vocational interests and choice behavior are difficult to generalize to other samples that do not have to make such a consequential choice at age 14 or 15.

Thirdly, although the overall sample size was sufficient (n = 358), especially compared to other recent person-oriented research on vocational interests (e.g. Leuty et al.,

2016), our sample was drawn from student populations of only four schools in the Netherlands. This raises the question of whether or not similar subgroups would be found across different secondary student samples. As student populations are relatively homogeneous in the Netherlands, students being tracked into different educational levels based on cognitive ability, we expect that for students from similar educational levels (i.e. higher general education and pre-university) similar subgroups would be found. Yet, seeing as some of the latent profiles that we distinguished also consisted of a small number of students (e.g. the vocationally broad profile), future research should include students from more schools as well as include students from lower educational levels.

A fourth limitation might be that the students in our sample were too young to have a realistic idea about their future career possibilities, not yet having any experience in the world of work, and therefore they might have answered the question "what do you want to be when you grow up?" based on their association with heroes, role models, or other imaginary aspects (Howard & Walsh, 2010). Finally, we might have affected some students' vocational interest development as we assessed their RIASEC interest profiles one time before the present study was carried out. They were assessed in November 2016, after which we reported back on their three-letter code (i.e., dominant interests, Holland, 1997), explaining what occupations/vocations might be in line with that code. Students might have remembered this when filling out the questionnaire again in April 2016, or they might have been triggered to further explore educational programs in these directions.

Theoretical and practical implications

Our results with regard to students' nondifferentiated interest structures might be interpreted to show that in secondary school, vocational interests might still be developing towards more differentiated structures (Swanson, 1999; Holland, 1997; Hirschi, 2009), for example because these students do not yet have a clear understanding of the working world (Johnson & Bouchard, 2009). It has been argued that if these students spend time on further exploring possible vocational/occupation environments, they might develop a more pronounced interest in one or two RIASEC domains (Hirschi, 2009). In order to examine if this is the case, future research should focus on the longitudinal stability of the vocational interest structure. Our study

included only one measurement moment where it would have been interesting to examine if the interest profiles remain the same after transitioning to upper secondary education. For example, the number of students classified into the nondifferentiated profiles might decrease over time if they progress into upper secondary education and develop a clearer image of self (Hirschi, 2009). Hence, within and between-person longitudinal research on vocational interest profiles is needed.

An alternative explanation for the identified low, neutral and broad vocational interest profiles is that vocational interest assessment tools based on the RIASEC model do not fully capture the complexity of students' interest structures (e.g., Akkerman, Vulperhorst, & Akkerman, 2020). Students might endorse more specific interests than afforded by the vocational/occupational preferences measured by these tools, or they might experience other interests, for example in other "post-modern" vocational activities (as was also argued by McLarnon et al., 2015) or the leisure domain (Leuty et al., 2016). Future research should explore this proposition by investigating these students' interests in a more open-ended manner as part of their everyday lives (Slot, Wubbels, & Akkerman, 2019; Slot, Vulperhorst, Bronkhorst, van der Rijst, Wubbels, & Akkerman, 2020), in order to gain a more holistic understanding of how these adolescents combine and develop their multiple life-long interests in deciding on their future (Akkerman & Bakker, 2019). Such an approach might involve open questioning about life-wide interests, such as what do adolescents like to spend their time on in daily life and why? How do adolescents experience interests in school or at home in relation to their past, present, and future?

This more open and holistic approach is important to consider for future research, also with regard to the association between interest and choice behavior. Whereas previous research (e.g., Perera & McIlveen, 2018) has often posited a direct relationship between having specific interests and making a choice in line with these interests, we have shown that the link between interest and choice might be more complex. In line with a recent study by Lykkegaard and Ulriksen (2019), it can be argued that students' ideas about their futures are not stable and that students are continually re-considering their future careers as they also take into consideration their ideas about who they are and want to be later in life outside of academia or work (Vulperhorst, Van der Rijst, & Akkerman, 2019). As a result, their individual educational trajectories are hard to predict, and an

assessment of vocational interests in secondary school might not be appropriate as applied tools cannot account for the possibility of exploring multiple interests. At the same time, educational track choice has been part of the Dutch educational system since 1999 (Dutch Educational Council, 2011). Therefore, we strongly advise educational practice to develop instruments or methods that do account for interest multiplicity.

Conclusion

In conclusion, the current study has found seven vocational interest profiles with different levels and shapes of differentiation that are consistent with previous work, although a higher proportion of students with nondifferentiated interest structures was demonstrated. Furthermore, we built upon prior work by showing that nondifferentiation does not necessarily mean that students experience difficulty in thinking about their desired education or occupations. We have provided suggestions for future research to further explore the associations between vocational interest structures and choice-making behaviors across the different interest subgroups. We thus confirm prior work by showing the added value of using a person-oriented approach in studying vocational interests, as such an approach gives more detailed insight into the different interest levels and combinations of interests that secondary students possess. Practically, our results demonstrate how including all six RIASEC dimensions, instead of limiting to Hollands' three-letter code, might help in advising students in a holistic manner about their future-oriented decisions.
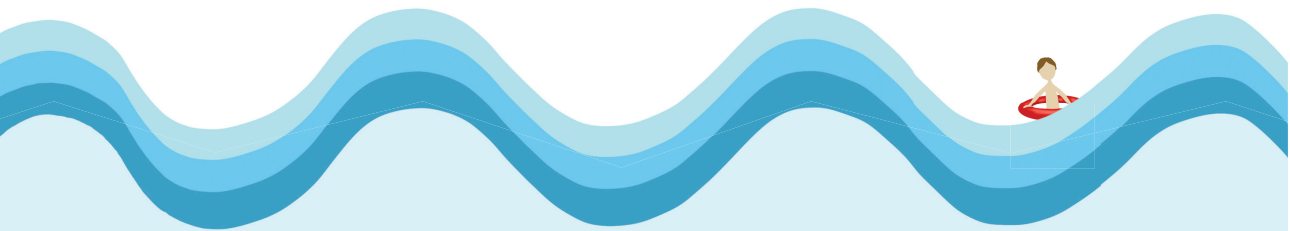
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Adolescents' interest experience in daily life in and across family and peer contexts

ABSTRACT

This study examined daily experiences of interest in and across the social contexts of family and in-, and out-of-school peers. Forty-two Dutch adolescents, aged 13-15 years, provided us with two weeks of experience sampling data on their engagement in interesting topics and activities throughout their daily lives. Findings show that adolescent daily life included a diverse range of parallel interests. School-related interests made up a substantial part of adolescents' daily lives, challenging the idea of mere disengagement of secondary school students in academics. Findings also show that some interests are strongly bound to a specific context, while others appear across family and peer contexts. This indicates how multiple contexts can simultaneously feed interests, something that calls for further across-context research of interest development.

Key words: interests, daily life, adolescents, social contexts, experience sampling method

INTRODUCTION

Adolescence is a developmental phase characterized by many physical, emotional, and social changes (e.g., Crone & Dahl 2012; Steinberg & Morris 2001). During this phase, adolescents develop idiosyncratic interests crucial for the development of self (Krapp, 1999; 2002), real-life choices, future orientation, and general well-being (Rounds & Su 2014; Sharp & Coatsworth 2012), and these interests are important determinants for engagement and achievement in school (Ainley 2012; Schiefele, Krapp & Winteler, 1992). Adolescents tend to seek opportunities to engage with the content of their interests both in and out of school, a process that contributes to their identity formation and, consequently, affects their educational choices (Hofer 2010; Jacobs & Eccles 2000; Krapp 2002). Pursuing interests in daily life is a complex process, as interests are embedded in and constructed through interaction with social contexts (e.g., Barron 2006; Bergin 2016; Krapp 2002; Renninger & Hidi 2011). Adolescents continually engage in content that may or may not be experienced as interesting, where interest can be seen as a preferred type of engagement (Hofer 2010). On the one hand, situations may steer adolescents toward specific topics and activities for engagement (e.g., Knogler et al. 2015; Tsai et al. 2008); on the other hand, adolescents themselves may also seek opportunities for engagement in particular content (e.g., Hofer 2010; Moeller et al. 2016; Tsai et al. 2008). Most research has investigated these two sources of interest separately. Whereas interest has been studied extensively in relation to the daily context of school (e.g., mathematics classroom, Mitchell 1993), less is known about interest in out-of-school contexts (Renninger & Hidi 2011). Other research has studied similar phenomena across in- and out- of school contexts (e.g., Hedegaard 2014), but how adolescents engage in interests across contexts is particularly unexplored. Only a few scholars have addressed engagement in a particular interest in both in- and out-of-school contexts (e.g., Akkerman & Bakker 2019; Azevedo 2013; Braund & Reiss 2006; Bronkhorst & Akkerman 2016; Uitto et al. 2006). These scholars were guided by an ecological, life-wide approach, meaning they included both in- and out-of-school contexts in their research on learning and development. The purpose of the present study is to begin to fill this gap by studying adolescents' experience of interest across family and peer contexts.

Interests of adolescents

Interest is a psychological state characterized by an affective component of positive emotion and a cognitive component of concentration (Hidi & Renninger, 2006). Interests are always related to particular content (e.g., a material object, topic, activity, or idea; Renninger & Hidi, 2016, p. 16). It can be triggered through adolescents' explorations and social interactions with family, teachers, and peers. This interest can be momentary, but it might also develop into a more enduring person-object relation (Krapp & Prenzel, 2011). Whether interest persists over time is dependent on the person's needs and goals, other (competing) interests, and the opportunities and demands in his or her environment (Eccles et al., 1993; Hofer, 2010; Jacobs & Eccles, 2000). Whereas most researchers have focused on either momentary or longer-term interests, this study includes both by assessing the everyday experience of interests in adolescence (Tsai et al., 2008). This is important given the worldwide concern on the developmental decline of adolescents' academic interest (Hidi & Harackiewicz, 2000; Potvin & Hasni, 2014). Although previous research on academic interests has often reported on the energizing effects of interest on learning, the field struggles in finding a full explanation for this phenomenon (Renninger & Hidi, 2011). We therefore deem it important to study the experience of interest beyond the academic domain, also taking into account out-of-school topics and activities that adolescents experience as interesting in their daily lives with peers and family. Indeed, research on adolescents' daily lives suggests that most interests tend to evolve naturally from active leisure activities (e.g., sports, hobbies), presumably because these activities trigger both intrinsic motivation and deep attention and thereby support adolescents in discovering their personal interests and talents (Larson, 2000; Sharp & Coatsworth, 2012; Csikszentmihaly & Larson, 2014; Kleiber et al., 2014). Besides leisure activities, socializing is mentioned as an important source of interest in adolescence, as it triggers feelings of intense engagement and belonging (e.g., Coatsworth et al., 2005). Also, consumptive and interactive media such as TV, video games, computers, and smartphones play an increasingly large part in the daily lives of the current "Internet generation" (Bassi & Della Fave, 2004; Van den Beemt et al., 2010). Maintenance interests (e.g., dressing, styling, personal care, transportation) are an often necessary part of life but might still prompt interest (Hofer 2010). Finally, although scholars report a general lack of interest in productive activities such as school (Hidi & Harackiewicz, 2000), this may vary per school subject (Bergin, 2016). Summing up, empirical results to date lack a comprehensive view on adolescents' experience

of interests in daily life. Following the research stated above, we aim to investigate all interests that adolescents encounter in daily life, including interests in domains of leisure, school, maintenance, socializing, and media, thereby focusing on adolescents aged 13–15 years, a period in life in which interests are already found to be relatively stable (Low & Rounds, 2007).

Contexts for adolescents' interest experience

Daily life in adolescence is typically built up out of multiple contexts (Phelan, Davidson, & Cao, 1991). Every context includes a relatively stable structure of social relationships and meaning, imposing its own rules and expectations on the individual, thereby creating opportunities or constraints for engaging in particular content (Akkerman & Bakker, 2011; Zittoun & Gillespie, 2015). Research on adolescents' ecological systems and time use has made an empirical distinction among the social contexts of family (parents, siblings, extended family), peers in school (e.g., classmates), and peers out of school (e.g., friends, romantic relationships) (Anderson, 2013; Bronfenbrenner & Morris, 1998; Smetana, Campione-Barr, & Metzger, 2006). These contexts tend to be different on epistemic, social, and cultural levels, hence also in the extent to which specific interests might be experienced or facilitated (Bronkhorst & Akkerman, 2016; Grossen, Zittoun, & Ros, 2012; Phelan et al., 1991). Studies that have explored interest across different contexts suggest parents to be the most important facilitators of experiencing and developing interest, as they provide their children with opportunities and resources needed to engage in particular interests (e.g., paying for piano lessons, buying clothes, going to a museum) (Bergin, 2016; Crowley, Barron, Knutson, & Martin, 2015; Levey 2010). By co-constructing knowledge with their child about a specific topic through dialogue and activities, parents can help their children build the so-called islands of expertise already at a young age (Crowley & Jacobs, 2002). In adolescence, parental involvement continues through the mental support of their children, for example, in supporting their interest in technology (see Barron, 2006). Sibling relationships can also become more supportive with age, although this has not been researched in relation to interest (Smetana et al., 2006). Friends or peers in or outside of school can positively or negatively influence interest in academic topics, achievement, and career selection (Bergin, 2016). This might occur through socialization and selection processes; adolescents try to fit their interests to their friends' interests and choose friends who have similar interests (e.g., Low, Yoon, Roberts & Rounds, 2005). In sum, the literature

3

shows that family and peers in and out of school might all support interests in daily life, but whether and how interests are simultaneously displayed in these social contexts is particularly unexplored.

Across-context perspective

The described interplay between interests and multiple contexts in daily life requires an "across-context" perspective (Akkerman & Bakker, 2019; Bronkhorst & Akkerman, 2016; Falk et al., 2016). Such a perspective tries to expand the common unit of analysis, that is, a single context (e.g., Valsiner & van der Veer, 2000), and allows for a study of the adolescent's interests in continuous interaction with different social contexts over time (i.e., idiosyncrasy) (Azevedo, 2013; Barron, 2010; Bergin, 2016; Pressick-Kilborn, Sainsbury, & Walker, 2005). Such a holistic approach is in line with recent developments in the field of educational and learning sciences, where researchers have started to investigate how different social contexts simultaneously promote or constrain learning and development in daily life (Falk et al., 2016; Hviid, 2016; Torquati & Rafaelli, 2004). This approach calls for new methodologies that allow for the investigation of everyday (inter)actions. Therefore, our study will use an experience sampling method (ESM), providing us with an archive of highly ecologically valid data (Hektner, Schmidt, & Csikszentmihaly, 2007). An across-context perspective enables us to explore the extent to which different interests appear in different contexts, examining how the family, school peer, and out-of-school peer contexts generate experiences of interest. Research on this topic is still in its infancy, but preliminary evidence suggests that adolescents may strive for continuity in their lives both in and over time, trying to pursue parallel interests (Akkerman & Bakker, 2019; Barron, 2010; Bronkhorst & Akkerman, 2016). First, interests initially triggered in one context can be pursued and/or further developed in another context later on in time (Barron, 2006; Crowley & Jacobs, 2002). For example, an interest in modern art that is sparked in a museum perhaps develops further at school by doing an assignment on modern art. Hence, an interest can be continued across contexts over time. A second scenario might be at hand when differences between social contexts are temporarily united in one interest-related event (Phelan et al., 1991; Hviid, 2016), for example, when a child visits a museum of modern art with both his parents and friends from school (i.e., across-context continuity in time). On the other hand, interests can also be situated in a specific context, in that they are specifically bound to the physical, social, and material resources and opportunities

within a particular context (we call this across-context discontinuity) (e.g., Akkerman & Bakker, 2019; Pressick-Kilborn et al., 2005). This observed distinction between continuity and discontinuity requires an exploration of the extent to which interests appear in or across contexts in daily life.

Research questions

Two research questions are posed:

1. In what domains do adolescents report to experience interest in their daily lives together with family, peers in school, and peers out of school?
2. To what extent are adolescents' interests continuous across the contexts of family and in- and out-of-school peers, and does this continuity differentiate for domains of interest?

METHOD

Participants

All ninth graders from four Dutch secondary schools were invited to participate in the study. Since our aim was to study a sample of 50 adolescents, we used stratified sampling based on school class and gender to select the sample that would take part in our study (n = 90), anticipating for possible attrition rates. All students were from the higher secondary educational levels (i.e., senior general secondary education and university preparatory education), as we did not approach any students from the (lower) vocational education level. Adolescents took part in our study voluntarily. Informed consent was obtained from all individual participants and their parents before participation. Participants were offered financial compensation if they fulfilled certain payment criteria (25 €). These criteria were as follows: (1) adolescents should fill out at least three reports a day, (2) spread throughout the day (i.e., morning, afternoon, and evening), (3) their assessments should be accompanied by clear and elaborative comments on their experiences, and (4) they should at least have added ten contacts and two different social groups to their mobile application. Students who did not meet these criteria were excluded from the study (50%, n = 45). Three participants (3.3% of 90) did not complete the data collection due to technical problems with their smartphone. Hence, the final sample consisted of 42 adolescents (29 girls and 13 boys) who met all criteria and finished the data collection period. Ethical approval

for this study was received from the ethical review board of the Faculty of Social and Behavioural Sciences of Utrecht University.

Procedures and measures

Smartphone application 'inTin'

We used ESM to study interest experience in and across contexts in daily life. This is a valid and reliable self-report measure that can be used to obtain empirical data on psychological states, daily activities, and social interactions (Csikszentmihaly & Larson 2014, p. 35). ESM entails that participants are studied in their natural environments and that experiences are measured in a systematic and momentary way. Widely accessible smartphones offered opportunities to apply ESM on our sample. The smartphone application that we used is called *inTin* (i.e., interested in) and was developed by Akkerman and Bakker (2012–2014) for studying the development of multiple interests in all life domains and in interaction with the social network of its users. It was piloted and validated in 2015–2016 and has proven to be a reliable and valid instrument to study the idiosyncratic nature of interests in daily life, depending on proper instruction and completeness of the social network that participants add to the application (Akkerman & Bakker 2012–2014).

Assessment procedure

Participants were beeped on their smartphone every 2 h during waking hours to report their momentary experiences for two consecutive weeks in February 2016, with a maximum of eight per day. A few months prior to the data collection, they received a 1.5-h instructional briefing, during which they discussed what interests are and how to use the application. Additionally, they practiced filling in the application and were encouraged to ask questions. After the instructional meeting, participants were asked to take part in a pilot study in order to be prepared for the daily task of reporting interest activities repetitively. At the start of the actual data collection in February, participants had to enter all topics and activities that they perceived as interests. This resulted in a list of interests at the start for each participant. Similarly, at the start, participants were asked to list all social contacts that are important to them or that they see often (Fisher & Shogren, 2016). They were asked to designate the type of contact by choosing one or more options from a list including the options of classmate, friend, family, teacher, acquaintance, neighbor, colleague, or other. They were also required to add at least two

social groups (i.e., cluster of social contacts), for example, "class" or "family." Participants were free in choosing the composition and name of a group. Individual contacts could be added to one or multiple social groups; for example, John can be part of both the group "class" and the group "hockey team." During data collection, the resulting lists could be extended, as participants had the possibility to add interests, contacts, and groups on every reporting occasion. Participants received triggers with a 2-h interval during each day for 14 days. They received the first trigger 2 h after their reported wake-up time and the last trigger at maximum half an hour before their reported bedtime. After each trigger, participants could report on the interests they just spent time on. If so, they reported for each interest with whom and how (e.g., face to face, phone, Internet) they were involved in the interest. This creates a so-called interest-contact event for every reported interest. Thus, a moment in time where an object of interest coincides with one or more contacts from a participant's social network. When reporting "with whom," adolescents could select "alone," "an individual contact," or "a social group" using the contact/network list they created. At the end of each interest-contact event, they were asked to answer two open questions: "What did you do/think/talk about?" and "What did you think was interesting about this event?" There was no restriction as to how fast adolescents had to respond to their trigger, since this might increase the intrusiveness of the method further. After a response, a new trigger would follow after 2 h. During data collection, every participant was supported and motivated by a research assistant. These assistants acted as coaches, instructed to create a sphere of positive encouragement ("Good job, you are almost halfway!") and helped participants to fulfill the criteria of payment ("Do not forget to report your interests this morning/afternoon/evening: Did you spend time on any interesting topics or activities?").

Data analyses

All data provided by participants were directly saved on an online users database with secured access for the first and second author set up and maintained by a professional web team of Utrecht University.

Interests. In total, the 42 participants reported 726 interests. Due to a high similarity of some of the interests (e.g., watching the news or watching today's bulletin), two or more interests were merged into one in several cases (e.g., watching the news), resulting in 705 interests that were coded. Of the interests added to inTin at the start of the data

collection, 4.8% were not reported in any interest events during the 2 weeks of data collection and were therefore not included in the analyses, resulting in 671 interests. Based on Kleiber et al. (2014), a coding scheme was developed to code all interests. We adopted their distinction among leisure, productive, and maintenance activities. We also included the specific domain "media," since media play an increasingly large role in the socialization and learning of adolescents (Barron, 2006; Bassi & Della Fave, 2004). Additionally, unlike Kleiber et al. (2014), we regarded interests in social topics and activities as a separate domain ("socializing"; Azevedo, 2011). Finally, we added the category "other" in order to code the interests that could not be attributed to any other domain. Appendix 3.1 includes the final coding scheme with six domains of interests, each subdivided into detailed codes. The domain productive includes interests related to school, i.e., academic (math, English, science, history) and nonacademic classes (e.g., arts, music, PE), homework activities, and other interests related to school, such as career events. Leisure interests included interests in structured or unstructured leisure, where structured leisure refers to interests in institutional or organized sports and hobbies, and unstructured leisure interests refer to, for example, reading, arts, travel, and unstructured sports such as running or fitness. The domain socializing includes interests in social interaction (chatting), hanging out with friends, going out, partying, and shopping. Media interests are both interests in consuming media (reading the news, watching TV) and interacting with media (gaming, social media). The maintenance domain refers to interests concerning self-care and directly serving well-being, such as doing your makeup and going to the hairdresser (see Kleiber et al., 2014). Interests in the category other are interests that could not be attributed to one of the other domains. This might concern interests related to a specific topic, weekend jobs, designing, repairing PCs, thinking/self-actualization, or miscellaneous interests such as "I want to sleep." As was recommended by Akkerman and Bakker (2012–2014), a code was always based on the label provided by the participant and the comments in the interest-event data (what did the adolescent do/think about/talk about and why did he/she find this interesting?). Participants were sometimes more specific about the content of their interest in their comments than in the label they had used in reporting their interest. An interest in watching TV could mean that one is really into watching TV, which means that this interest would be attributed to the media domain, or perhaps watching TV was part of their homework, which would make it a school-related interest. The coding scheme for interests was tested on a randomly selected subset of data and independently blind

coded by another researcher. This led to minor changes in the coding scheme due to different interpretations of some of the detailed codes. The interrater reliability was calculated after having a third researcher double code 100 randomly selected interests (approximately 14% of the total), with an acceptable result of ICC = 0.79 (Cicchetti 1994).

Contacts. Together, the 42 participants in this sample added 1195 unique contacts. When adding contacts, participants were able to select more than one type of relation. Almost all contacts could be attributed to one of the three social contexts (family, school peers, or out-of-school peers) based on the relation type and the social groups they belonged to (e.g., sport team, school class, church group, peer group). A very small part of the contacts were teachers, adult neighbors, or pets, which were excluded from further analyses as they could not be attributed to one of the contexts in focus (2.9%, 35 contacts). Furthermore, in 315 cases (26.4%), individual contacts received a double relation-type code, mostly (241 times) including the simultaneous relation of classmate and friend. These contacts were attributed to the school context, except when they belonged to both an in- and out-of-school social group (i.e., multimembership). This was determined through interpretation of the label that was attributed to the social group (e.g., "hockey team" refers to an out-of-school group). In total, 14 contacts were attributed to both the school and out-of-school contexts, five contacts were both family member and belonged to the out-of-school peer context, and one contact was part of both the family and school peer contexts.

Three types of across-context continuity. In order to determine the across-context continuity of interests, we first made a distinction between private and socially shared interests, where private interests are exclusively pursued alone. For the interests shared with significant others, we distinguished between interests that were shared with only one context in and over time (discontinuity), or across contexts in and over time (continuity). For across-context continuity, we initially defined two types: the first regarding interests that were shared with significant others across events (i.e., over time), and another describing interests that were shared with significant others within an event (i.e., in time). Type 1 is most easy to interpret, as it regards interests that were shared across contexts and events (e.g., Pete plays soccer twice during the wave, first with his father and then with his classmates). However, for type 2, i.e., continuity found within an event, we had to differentiate between two equivalent but

conceptually different subtypes. The first subtype (2a) refers to a situation in which two contexts are united in one interest-contact event (e.g., Pete plays soccer with his father and classmates simultaneously). The second subtype (2b) is needed in order to identify multimembership. Across-context continuity can also exist solely due to a significant other representing two contexts in one interest-contact event (e.g., Pete plays soccer with his twin brother Dave, who is also his classmate). Hence, we eventually identified three types of across-context continuity that we will report on in the "Results" section. Please read the illustrative examples in the "Results" section for further elaboration on these types of across-context continuity.

Interests nested in persons. Since interests are nested within persons, it was necessary to perform a check on whether we were allowed to analyze (dis)continuity at the interest level, i.e., if interests from the same person were not more alike than interests from different persons. We conducted an intercept-only model in HLM7 Student Version (Raudenbush et al. 2011) with the mean-centered outcome variable "continuity" (uncentered $M_{continuity}$ = 0.07) and calculated the amount of variance explained at level 1 (interests) and level 2 (person level). Only 11.12% of the differences in continuity were attributed to the person level, although the chi-square was significant (ICC = 0.11, $\chi 2$ [42] = 119.94; $p < 0.001$). For the scope of this article, we decided to focus on the interest level in explaining continuity across contexts.

RESULTS

Descriptive statistics

Adolescents completed 2,642 assessments in 14 days, which equals an average of 62.91 assessments per participant (range is 48-95). On average, adolescents experienced at least one interesting topic or activity in 3 out of 4 assessments.

In total, 671 unique interests were reported (see Figure 3.1). The domain most frequently reported was media, with 27.4% of the interests, such as watching TV/film, listening to music, social media, news, Internet, and online gaming. Watching TV/film was the most frequently reported category, representing 44.6% of the media-related interests. School also appeared to be a substantial source of interest; 24.9% of the reported interests were attributed to that domain. Academic school interests were reported

most frequently (approximately 40% of all school-related interests), such as interests in (topics related to) languages, biology, math, science, chemistry, or history. Leisure interests accounted for 21.2% of the total, with structured hobby or sport interests as the largest category, including those in a more formal, institutional setting, such as playing the piano, drumming in a band, and playing basketball or hockey. Socializing interests represented more than 12%, and the domains of maintenance and other captured 6.7 and 8.8% of the interests reported, respectively.

The largest proportion of contacts added to the application was attributed to the school peer context (41.1%), followed by the out-of-school peer and family contexts (29.7 and 29.2%, respectively). We found that 33.8% of the interests were experienced in private, i.e., engagement in objects of interest without the presence of significant others. The other 66.2% of interests (n = 444) were shared with one or more significant other(s) in at least one reported event. The following section further explains which domains of interest were associated with what social contexts (i.e., interest-context ties).

Interest–context ties

Figure 3.2 shows the different domains of interests that appeared in the family, school peer, and out-of-school peer contexts. In total, 1119 interest-context ties were found across 962 reported events. On average, this means that an event was associated with 1.16 contexts. Findings show that all three contexts were associated with a wide range of interests, although some differences became apparent. Family was associated most frequently with interests in media (47.1%), especially watching TV/films. Interests in leisure (mostly sports and hobbies) and socializing were also often associated with family (19.0 and 15.6%, respectively). School peers were most often reported in relation to school-related interests (48.1%), such as academic classes. Out-of-school peers appeared to be associated with leisure interests the most (36.77%), particularly sport-related interests. Also, like family, they were associated with interests in media and socializing (17.8 and 17.24%, respectively). These findings show that some interests appear more often in some social contexts than others. At the same time, every context was associated with all domains of interest, leading to the question in our next section of to what extent interests are engaged in across contexts.

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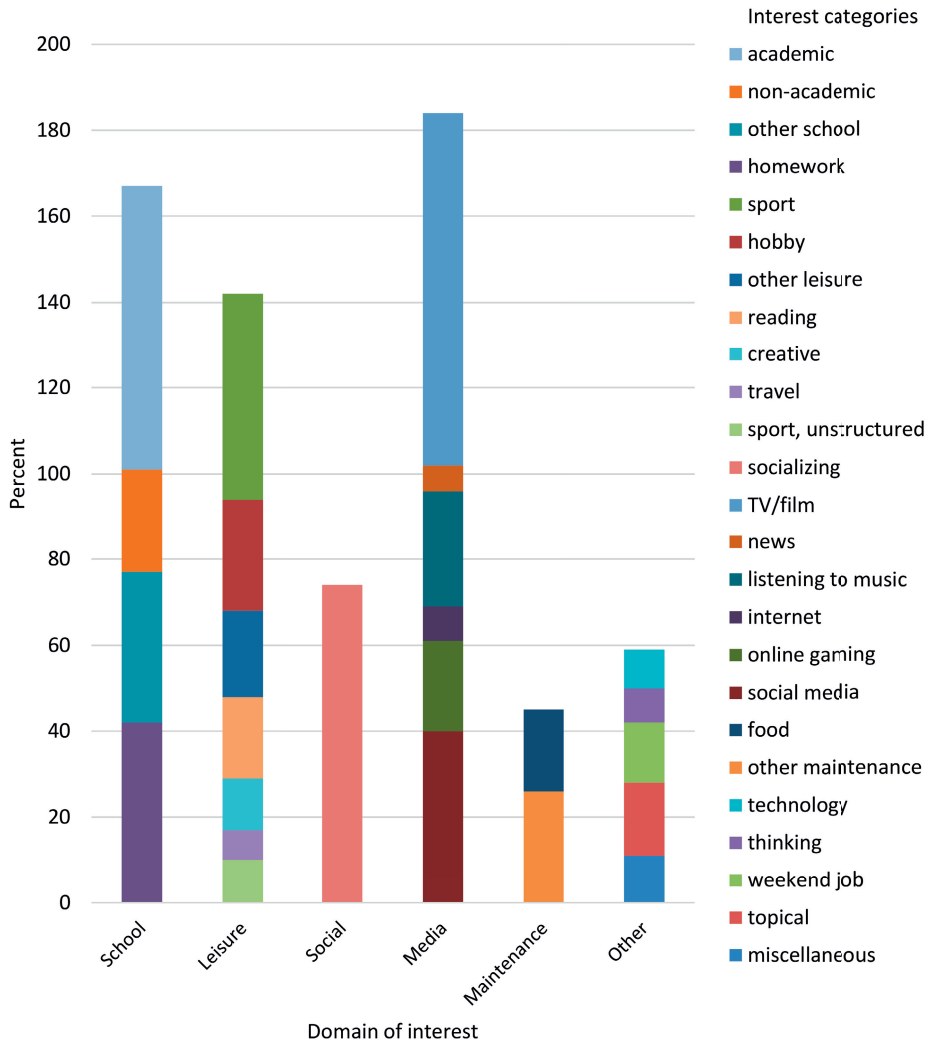
Figure 3.1. Percentages of interests reported in six different domains, stacked per interest category

Across-context continuity

Concentrating on the interests that were socially shared (n = 444), a large part (74.5%, n = 331) was discontinuous, i.e., engagement with that specific topic or activity was situated in only one context. Of these discontinuous interests, 33.2% were situated in the family context, 45.9% in the school peer context, and the remaining 20.9% were related to the out-of-school peer context. Still, one in four of the socially shared interests (n =

113, 25.4%) was continuous across contexts. Figure 3.3 demonstrates how the different domains of interest were distributed across the three types of across-context continuity. In general, the figure shows that most domains of interest appeared across all continuity types. More than half of the interests that appeared across contexts also appeared across events, i.e., over time (type 1, 51.3%). This across-context continuity applied mostly to media interests. Over a third of the interests (34.5%) was continuous across contexts due to multimembership of an actor involved (type 2b), with school and leisure interests as the biggest domains. Interestingly, only 2% of the actors in the networks of our participants were responsible for this proportion of across-context continuity. Finally, the remaining interests (14.2%) were continuous across contexts within an event (type 2a), which mostly concerned socializing interests. Together, leisure, school, and media interests accounted for almost 75% of the continuous interests, whereas maintenance interests were hardly represented (i.e. only *one* interest in maintenance was shared across contexts).
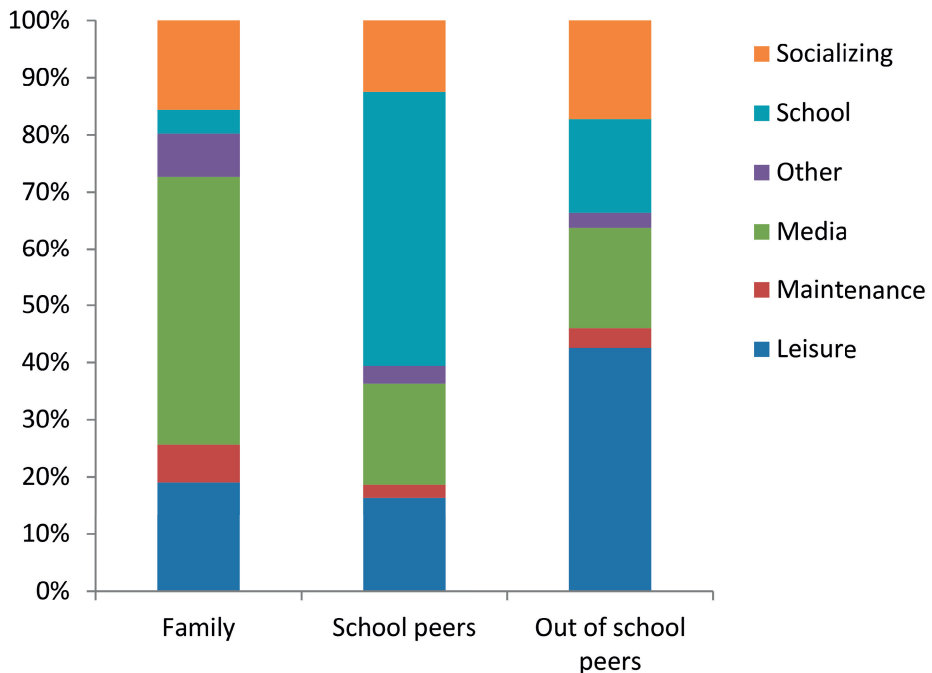

Figure 3.2. Percentages of interest–context ties (*n* = 1119) reported per social context over all domains of interest (socializing, school, other, media, maintenance, and leisure)
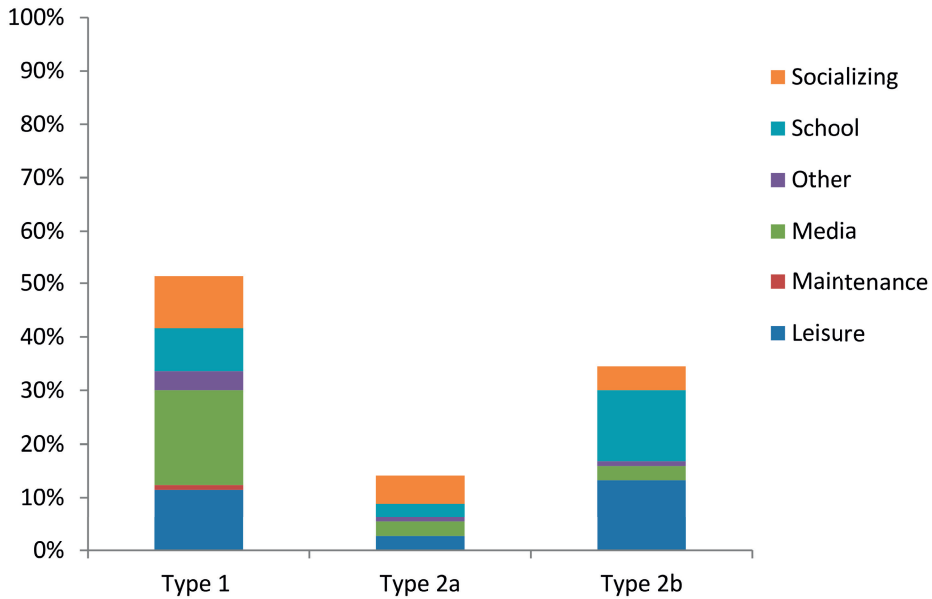
Figure 3.3. Percentages of all domains of interest represented in the three types of across-context continuity, where Type 1 refers to continuity over time, and Type 2a and b in time

In order to further unravel the continuity across the contexts of daily life, Figure 3.4 reveals the extent of continuity across contexts. Across-context continuity was apparent among all contexts, with only five interests found to be continuous across all three contexts. Most continuous interests were found between school peers and out-of-school peers (n = 54), followed by family and school peers (n = 31) and then family and out-of-school peers (n = 23). It is noteworthy that the across-context continuity patterns resulted from interests of a wide range of participants. For example, the interests that appeared across school and out-of-school contexts were reported by 19 participants. It should also be noted that the strong connection between the contexts of school peers and out-of-school peers was caused by multimembership: 65% of the interests in both of these contexts were continuous in time due to a significant other simultaneously attributed to both the school and out-of-school contexts.
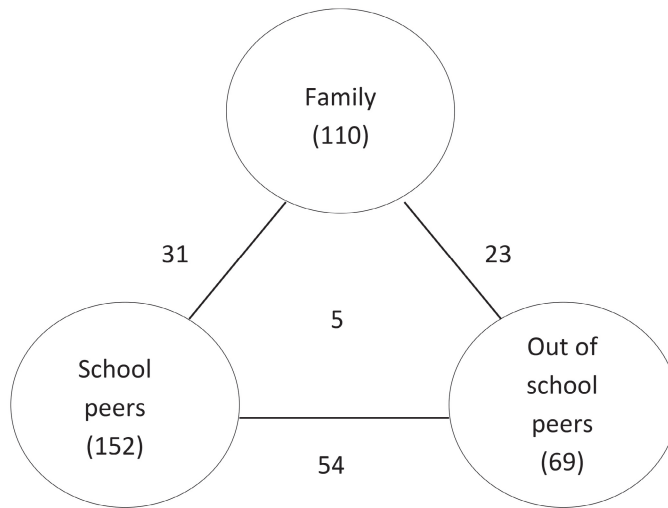
Figure 3.4. Number of discontinuous interests (in circles, *n* = 331) and continuous interests among the social contexts of family, school peers, and out-of-school peers (*n* = 113)

Illustrative examples

In order to clarify how the three types of across-context continuity might be expressed at the interest level, three examples were selected based on the domain of interest most frequently observed within a specific type of continuity. For the sake of diversity, we chose exemplary interests from three different participants in three different schools.

Type 1: Across-context continuity over time. Figure 3.5a shows the engagement in an object of interest of one of our participants, Sergio. Over 30% of the interests continuous across contexts and events (i.e. over time) were related to media, for example, (online) gaming. Sergio is interested in playing different (online) games, for example, Minecraft. He reported to play these games with significant others at six events (T_n in Figure) during the two weeks of data collection. At T_1, T_3, and T_5 he reported to play games with his sister, Lara. At T_4 he discussed his new PlayStation set with two of his out-of-school friends, Nick and Bryan. At T_2 he talked about one of the games he liked to play, The Last of Us, with his classmate and friend Luciano. Finally, at T_6 he played the pocket edition of Minecraft with one of his friends from out of school, Joelle. Hence, Sergio shared gaming with all three contexts over time in different manners, i.e. as an activity in itself but also as a topic for discussion.
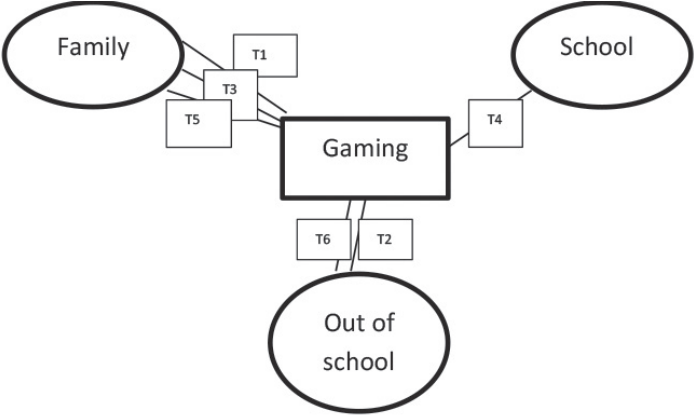
Figure 3.5a. Example of continuity across events, in which every T_n represents an interest–context tie, and a different *n* refers to a different event (i.e. point in time). T_1 refers to the first interest event in the week in which Sergio reported gaming and T_6 the last.

Type 2a: Across-context continuity in time. Figure 3.5b shows the engagement in an object of interest of another participant, Nora. Socializing made up more than 30% of the interests that were continuous across contexts and within events (i.e., in time). She reported that she went to the movies with her girlfriend clique, labeled by her as the "Chicks." Some of these friends were attributed to the context of school, as they were in her class, and others to the out-of-school context. Thus, the two contexts were temporarily united in one interest-contact event, i.e. when they went to the movies together.
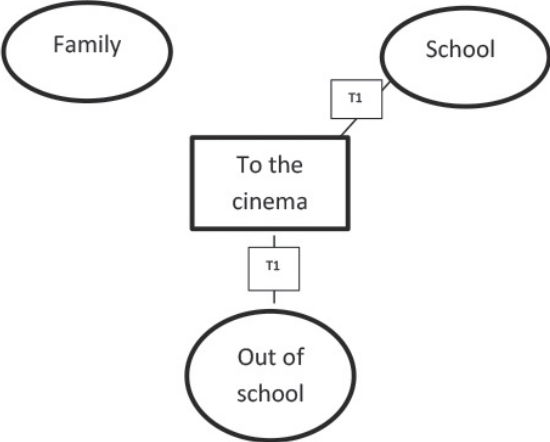
Figure 3.5b. Example of continuity within events, in which T_1 refers to the interest–context tie between the interest "to the cinema" and the contexts of school peers and out-of-school peers, as these were temporarily united in one event

Type 2b: Continuity due to multi-membership. In Figure 3.5c, we depict an illustrative example from the domain of school. For this type of continuity, we chose to exemplify the interest "physical exercise" (PE) from our participant Ariel. She reported to have been engaged in her PE class twice during the data collection period, both times together with one of her social groups labeled by her as "school." The across-context continuity resulted from a significant other named Larissa, a girl who is in her class, dance institution, and whom she also gets to meet in church. Because Larissa represented both the school peer and out-of-school peer contexts, this school-related interest was attributed to Type 2b continuity.
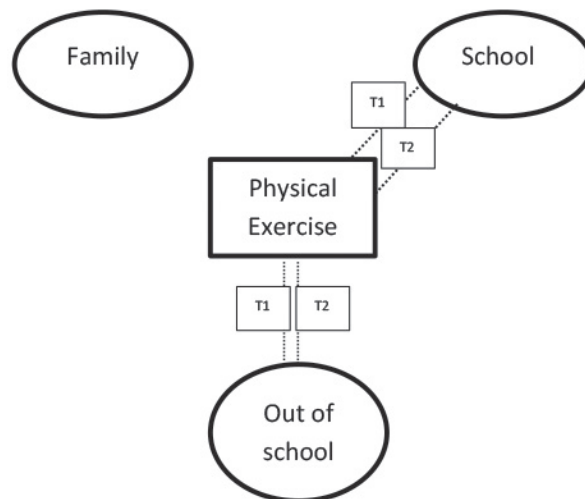
Figure 3.5c. Example of continuity within events due to multi-membership, in which every T_n represents an interest–context tie, and a different *n* refers to a different event (i.e. point in time). The presence of the dashed lines indicates that multi-membership caused the continuity across contexts.

DISCUSSION

Interests of adolescents have attracted growing attention as a vehicle to promote development of self and engagement and achievement in school (Ainley, 2012; Krapp, 2002; Rounds & Su, 2014; Schiefele et al., 1992; Sharp & Coatsworth, 2012). Interests, however, cannot be easily studied as they are embedded in and constructed through interactions in everyday life. This study was the first to assess interests with an ESM. The adolescents in our sample (aged 13– 15 years) were beeped up to eight times a day for

2 weeks, asking them to report the interests that they just spent time on as well as the significant others that they shared the event with. Using a mobile application to assess their life-wide interests has provided us with a much more detailed representation of adolescents' everyday experience of interests than previous research so far has revealed.

Regarding the first research question, our findings indicate that adolescents engage in a wide range of interests throughout their daily lives, both in and across the social contexts of family and in- and out-of-school peers. More specifically, we showed how adolescents' interests in school-related topics and activities make up a substantial part of their daily life, challenging the idea of mere disengagement of secondary school students in academics (Hidi & Harackiewicz, 2000; Potvin & Hasni, 2014). This result may encourage other researchers to use ESM to get a more detailed grasp on the experience of interests in and beyond the school walls. Secondly, in line with our expectations, adolescents also engaged in leisure interests (e.g., sports and hobbies) regularly. Indeed, these activities are believed to have great potential to be experienced as interesting, as they are often novel, challenging, and can meet adolescents' need for well-being and belonging, thereby triggering an experience of flow (Hofer, 2010; Kleiber et al., 2014; Larson, 2000). Importantly, our research has shown that many 'ordinary' aspects of daily life can actually trigger interest in adolescents, instead of being merely a 'routine' activity (Larson & Verma, 1999). Watching television, eating, and gaming are examples of activities that were experienced as functional. Perhaps, such 'routine-like' or 'time-filler' activities were experienced as interesting because adolescents can share them with their significant others, or because they can relax and relieve stress while zapping or playing a game. Chapter 5 of this thesis is targeted at gaining more in-depth knowledge on why adolescents experience particular content or activities as interesting, as to unravel the origin of interests as a product of everyday (inter)action.

Context-(in)dependency of interests

Regarding the second research question, we can conclude that interests are to some extent experienced across social contexts in adolescent's daily lives (i.e., across-context continuity). This finding fits with Barron's (2010) suggestion that adolescents strive for some continuity in the interest topics and activities that they experience throughout the different contexts in which they participate. Comparing domains of adolescents'

interests, we found that adolescents tended to experience media interests (e.g., gaming, social media, TV/film, music) most often with significant others from different social contexts (e.g., family and school peers). Again, this is in line with the research of Barron (2006, 2010) describing how these 'technology-driven' interests can transgress initial contexts or spaces, as material and relational resources are likely to be available across different contexts. However, our findings also showed that other interests were strongly context-dependent (i.e., across-context discontinuity), illustrating that interest experience can also be bound by the materials, opportunities, and resources of a specific context (e.g., Pressick-Kilborn et al., 2005). Hofer (2010) referred to this context dependency as the opportunity structure it provides for a certain interest. For example, maintenance interests (e.g., doing makeup) showed a high level of context dependency because these types of interests strongly rely on a daily routine-like structure (e.g., Krapp, 2002). On the other hand, interests in media might demarcate a more hybrid structure, as adolescents are provided with ample opportunities to engage in them across contexts (Gutiérrez, Baquedano-López, & Tejeda, 1999). To fully comprehend the contextualized nature of interest, we recommend future research to study the situational engagement of an interest of a specific individual in more detail. An example of such a study has been done by Azevedo, who studied the complex configuration around a single interest, which he refers to as the "line of practice" (Azevedo, 2011). Understanding how interests originate and develop in interaction with various social, material, and cognitive resources, both in and across contexts, is crucial in order to be able to foster long-term interest, not only in but also outside the school (Bergin, 2016).

An unexpected finding that we would like to discuss here is that interests in the domains of school and leisure were often found to be continuous across contexts due to multimembership of a significant other (e.g., a person is both a classmate and a teammate). Multimembership was a direct result of our choice to extend the unit of analysis from a single context to multiple contexts and demonstrates how contexts can overlap (i.e., in terms of social others that belong to two or more worlds). People who (un)intentionally function as a bridge between social contexts may be seen as brokers (e.g., Wenger, 2010). Brokers form a unique link between otherwise separated contexts (Akkerman & Bakker, 2011; Bronkhorst & Akkerman, 2016); hence, these people can play an important role in establishing continuity. Interestingly, only a dozen significant others functioned as brokers (2% of the total), impacting over 30% of the continuous interests.

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Most brokers were positioned between the school peer (e.g., class) and out-of-school peer contexts (e.g., sport club, church). Multimembership is an important issue to take into account in any research taking an across-context perspective.

Limitations and future research

Although the present study contributes to the research on interests in daily life, the findings should be interpreted in the light of some limitations. First of all, the adolescents in our sample were all in the higher educational levels in the Netherlands and presumably grew up in families with more opportunities, socially and materially, than adolescents in the vocational levels. This might have affected the interests that they reported and it would be interesting to see the differences with lower social and more ethnically diverse groups. Secondly, in order to achieve an ecologically valid sample, we selected a subsample of adolescents for the purpose of this study, which might include adolescents with a higher interest level and more and broader interests in general than the adolescents who did not fulfill the criteria for selection. Also, the novelty of assessing interest through ESM required us to place a large emphasis on describing the interests and contexts that adolescents reported, which can be regarded as only a first step toward a more thorough understanding of interest development over time, in and across social contexts in daily life. Time-series analyses or dynamic multilevel modeling may serve the purpose of investigating intensive longitudinal interest data in a more quantitative manner (Hamaker & Wichers, 2017; Slot, Bronkhorst, Akkerman & Wubbels, 2020). Such techniques would enable a paradigm shift toward a more person-centered perspective, acknowledging both within-person dynamics and between-person differences at the same time. Despite these limitations, our study was the first to use ESM to measure the experience of interests in daily life among adolescents. Future research can build on our work by further exploring possibilities for analysis with moment-to-moment interest data, such as with regard to the development of interests over time and how this development might be different for interests that are highly context-dependent than for interests that show a more hybrid structure (e.g., media interests). Another interesting focus might be to investigate the development of content, e.g., how a topic-specific interest might develop over time into a strongly internalized interest, supported by a diverse range of topics and activities (see Akkerman & Bakker, 2019; Zittoun, 2015). Furthermore, a person-centered approach is needed to study adolescents' rationale for pursuing interests in or across contexts. Previous

research has argued that some adolescents (un)consciously try to establish continuity across contexts, whereas others might keep their contexts "separated" (e.g., home and school, Phelan et al., 1991). Taken together, the study described here was the first empirical study to take a holistic approach on adolescent's everyday experiences of interest, using ESM to assess a life-wide range of interests experienced in and across family and peer contexts. Our findings illustrated how adolescent daily life can include a diverse range of (parallel developing) interests, some of which are context-dependent and others that are experienced across contexts. This demonstrates the importance of adapting an across-context perspective in order to understand how different social contexts simultaneously promote youth development.

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APPENDIX 3.1
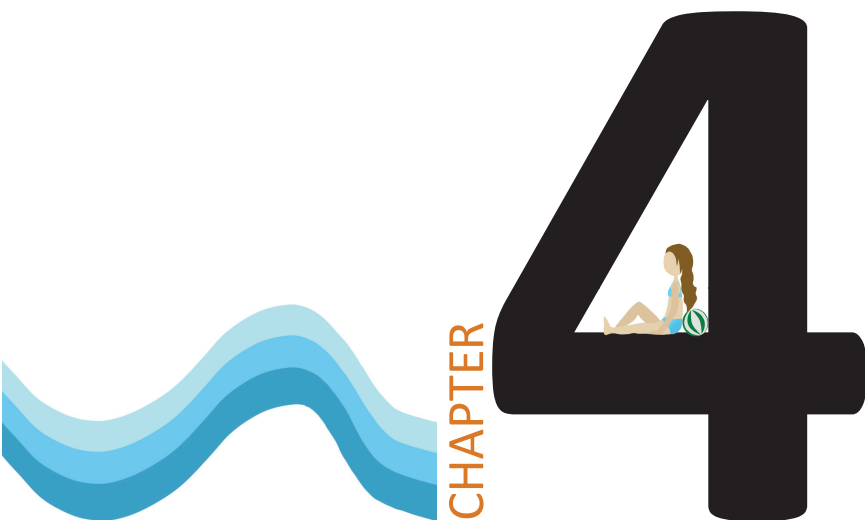
Coding scheme for reported interests

Domain of interest	Description
Productive	
Academic school	*Academic classes, projects, and tasks, such as Dutch, English, math, science, history, geography*
Non-academic school	*Non-academic classes, projects, or tasks, such as art, music, PE*
Other school	*Breaks or other activities not related to class (e.g. profile choice)*
Homework	*Homework activities*
Leisure	
Structured leisure	*Institutional or otherwise organized (including trainings, gatherings)*
Sport	*Playing sport, providing trainings, or other activities to do with sports inside an organizational structure*
Hobby	*Structured hobbies, such as piano playing (including the lessons), or youth clubs*
Unstructured leisure	*Outside institutions, absence of an organizational structure, and/or incidental leisure activities or topics*
Reading	
Creative	*Drawing, photography*
Travel	*Holiday, traveling*
Sport, unstructured	*Running, fitness*
Other leisure	
Socializing	*Social activities with an incidental nature (partying, shopping, chatting)*
Media	
News	*e.g. watching the news, reading a newspaper*
Watching TV/Netflix series/programs/films	
Listening to music	
Internet/Google	*Looking up information online (consuming)*
(Online) gaming	*PlayStation, online gaming, Wii*
Social media	*YouTube, Instagram, WhatsApp, Pinterest, etc.*
Maintenance	*Daily life task interests*
Food	*e.g. eating/making food*
Other (personal care, transportation)	*e.g. make-up, hairdresser, cycling, riding the bus*

Domain of interest	Description
Other	
Topical interest	*Interests that refer to a small, specific topic (e.g. burns, cancer), are situational, and not directly related to any activity but rather to a philosophical or societal theme or topic (caring about the world, self)*
Technology	*Programming, building websites and computers, or other technological artifacts*
Thinking/self-actualization	
Weekend job	
Miscellaneous	*Interests that could be categorized within the other domains*

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CHAPTER 4

The role of school in adolescents' interest in daily life

ABSTRACT

Questioning adolescents' reported lack of interest in school, this study aims to present a more nuanced understanding than previously described of the role of school in adolescents' interests in daily life. We scrutinized 7239 interest experiences reported by 44 adolescents using an experience sampling smartphone application *inTin*, eventually yielding 2000 references to school. Our analysis revealed that adolescents referred to school in their interest experiences in three ways, reporting (1) interest *in* school, where adolescents showed selective interest in their school's curricular and co-curricular content (i.e. school as object of interest), (2) interest *at* school, where adolescents showed interest in social and leisure content to enrich their time in school (i.e. school as context for interest), and (3) interest *after* school, where adolescents showed interest in social and leisure content to recharge from and for school (i.e. school as a demanding practice in daily life). Four out of five adolescents refer to school in their interest experiences in more than one way, the others' interest experiences reflected a single way, with one adolescent not mentioning school in her interest experiences at all. We provide directions for adolescents' interest research as well as educational practice, including for teachers to connect to adolescents' interests and for adolescents to become more aware of how they can shape school to their interests.

Key words: interest experience, experience sampling method, role of school

INTRODUCTION

School is typically *not* seen as the object of interest for adolescents or as a context for developing interest. There are ample studies from all over the world (e.g. U.S., Italy, Senegal, Korea, Japan) reporting that adolescents experience high levels of boredom, low intrinsic motivation and other negative affect when participating in school (see Larson & Verma, 1999). These findings can be considered worrisome, not only because adolescents spend a quarter to a half of their waking hours in school (Larson & Verma, 1999), but also because lack of interest in school has been associated with low academic engagement and achievement over time (Lumby, 2011; Pekrun, Goetz, Daniels, Stupnisky, & Perry, 2010). Research even reports that interest in school tends to decline with age, especially in adolescence (e.g. Barmby, Kind, & Jones, 2008; Frenzel, Goetz, Pekrun, & Watt, 2010; Potvin & Hasni, 2014).

Yet, when examining these results, an alternative explanation could be that these findings are the result of studies focusing on aggregated results in adolescent populations (e.g. adolescents' averaged interest levels), employing instruments that predefine particular objects (e.g. chemistry, Krapp, 2002) and contexts of interest (e.g. at school, Barron, 2006). By asking adolescents to self-define their interests, report their individual interest experiences throughout daily life and analyzing these from a person-centered perspective (Akkerman & Bakker, 2019), this article aims to shed a different light on the role of school in interest.

Interest experiences

Historically, interest is defined as a predisposition to re-engage with a particular object, or a psychological state characterized by an affective component of positive emotion and a cognitive component of concentration (Hidi & Renninger, 2006; Renninger & Hidi, 2016, p. 16). Interest is seen as a product of continuous interaction between an individual and his or her environment (Hidi & Renninger, 2006; Krapp, 2003; Silvia, 2006). Typically, interest research has described the development of interest as an ongoing process that starts with the interest being triggered in a particular situation. This so-called situational interest may gradually develop into an interest pursued by the individual (i.e. grow towards an individual interest, Hidi & Renninger, 2006). Persistent engagement with an object of interest over time depends on one's experiences with

the object of interest, for example the attribution of value or positive feelings towards the object (e.g. Renninger & Hidi, 2011; Schiefele, 2009). Whereas situational interest reflects engagement in a specific content at a particular point in time (i.e. a 'fleeting' interest), individual interest refers to a person's predisposition to re-engage with specific content.

Different scholars have questioned characterizing interests by such a dichotomy, both on conceptual (Akkerman & Bakker, 2019; Azevedo, 2011; 2013; 2018; Barron, 2006) and empirical (e.g. Akkerman, Vulperhorst, & Akkerman, 2019; Draijer, Bakker, Slot & Akkerman, 2020; Knogler et al., 2015; Tsai et al., 2008) grounds. Scholars guided by life-wide, ecological approaches on interest have provided new insights into the complex nature of interest, together illustrating how interests are part of everyday life (e.g. Akkerman & Bakker, 2019; Azevedo, 2011; 2013; 2018; Barron, 2006; 2010; Bergin, 2016; Hofer, 2010). Basically, anything in daily life may trigger and sustain interest, being connected to the social, material and cultural opportunities that family, school and peer contexts provide for interest emergence and growth. Accordingly, adolescents' interest experiences, or engagement with a particular object (i.e. being a topic, activity, artefact, event, and/or idea) in a particular situation (Akkerman & Bakker, 2019), materialize in moving throughout their daily lives.

Interest experiences and school

Whereas experiencing interest in school has been associated with increased levels of motivation and achievement, research has repeatedly shown that adolescents often do not experience school as interesting (Shernoff, Csikszentmihaly, Schneider, & Shernoff, 2014; Larson & Richards 1991). This negative trend may be the result of focusing on describing the interests of the adolescent population as a whole (Krapp, 2000; 2002; Krapp & Prenzel, 2011; Ufer, Rach, & Kosiol, 2017) as well as by questioning adolescents about predefined objects in school, typically in terms of school subjects like physics or chemistry or associated topics (Krapp, 2002). Previous research has already shown how adolescents may differ in what they experience as interesting, and how their interests may develop in idiosyncratic ways. A study by Ufer et al. (2017) on adolescents' interest in the object of 'mathematics' has shown that when asking adolescents questions like "to what extent do you like mathematics?", the unique character and structure of a person-object relation remains underexposed. For example, where one adolescent

might like solving word problems, another adolescent might be more interested in algebraic computations. Moreover, a study by Krapp and Lewalter (2001) on job-related interests has shown that while the average level of interest decreases over the years, focusing on intraindividual processes showed a positive trend, namely that adolescents all reported to have discovered new areas of interest. Hence, in order to shed a more nuanced light on the role of school in adolescents' interests, it would be useful to center adolescents' interest experiences in daily life (Frenzel et al., 2010; Krapp, 2000; 2002; Krapp & Prenzel, 2011; Ufer et al., 2017; Valsiner, 1992).

In studies adopting a person-centered perspective, adolescents self-report their moment-to-moment interest experiences and self-define the objects of interest they engage in, where objects of interest may refer to anything in a person's life space (e.g. topics, activities, material tools, ideas, or events; Krapp, 2000; 2002). Recent studies have already revealed how valuable it can be to take such a person-centered perspective (Azevedo, 2013; Akkerman & Bakker, 2019; Barron, 2010). For example, Slot, Akkerman and Wubbels (2019) demonstrated that, when adolescents self-report their objects of interest, school is reflected in 25% of the objects of interest, indicating that adolescents *are* indeed to some degree interested in school. Also, a study by Akkerman et al. (2019) described the multiple ways in which school interests can be experienced by adolescents, where school was hardly represented as a well-developed, individual interest. Still, little is known on the specific ways school can be related to adolescents' daily interest experience.

The role of school in adolescents' interests

School is often considered a practice that may distract adolescents from pursuing their interests (Shernoff et al., 2014), whereas at the same time school plays a role in supporting adolescents' personal development and thus interest in learning (e.g. Biesta, 2012). Indeed, research has found that despite school being difficult, it *can* play a role in triggering and developing interest through aspects of the learning materials (Hidi, 1990; Hofer, 2010; Knogler, Harackiewicz, Gegenfurtner, & Lewalter, 2015; Mitchell, 1993; Schiefele, Krapp, & Winteler, 1992; Tsai, Kunter, Lüdtke, Trautwein, & Ryan, 2008) as well as by organizing field trips and other co-curricular activities like sports, drama and music. These activities are generally seen as extensions of or complementary to the academic learning program, i.e. the curriculum, and sometimes also labelled as 'extracurricular'

4

(Fredricks, Alfeld-Liro, Hruda, Eccles, Patrick, & Ryan, 2002; Verhoeven, Poorthuis, & Volman, 2019). Renninger, Bachrach, and Hidi (2018) recently reported that in order to trigger interest in learning, triggers "related to the self, such as personal relevance, ownership, and character identification, may be more universal than other triggers" (p. 11). This shows the importance of self-identification with the learning content, and that interest is likely to be maintained if learners are aware of their learning process (i.e. what am I working towards and where am I in the process). At the same time, these scholars stressed that triggering interest is more complex than often regarded by researchers, and school should not just 'insert' triggers into the classroom as this will not have the aspired effects.

Co-curricular activities might be likely to provide opportunities for triggering or developing interests. They tend to be similar to the structure of leisure activities as they typically provide more degrees of freedom for adolescents to choose their what, how and why of doing particular activities (Hofer, 2010). Also, they might have a positive impact on adolescents' development of self (Feldman & Matjasko 2005), for example because they may develop competencies that are related to collaboration, time management, and self-discipline/regulation (Larson, 2000).

Although educational research typically describes school in terms of a curriculum and co-curriculum that is taught by teachers with a deliberate intention towards validating learning (Bronkhorst & Akkerman, 2016), for adolescents school is about more than that, like socializing with peers (Bergin, 2016). Peer relationships are essential for adolescents: they tend to spend more time with their peers than parents, even outside school, but have most contact with peers during school hours (Gray, Culpepper, & Welsh, 2012). There is some research that showed that adolescents engage in many school-related activities like arts and athletics because they have strong social goals (i.e. want to be with friends or make friends) (Fredricks et al., 2002). Hence, we expect that in addition to the curricular and co-curricular content, there may be other ways in which school might reflect in adolescents' interest experiences.

Moreover, research from an ecological perspective has indicated that interests have the potential to extend initial time and place and may thus be experienced across contexts (e.g. Slot, et al., 2019). For example, thought processes initiated at school

may extend to other contexts (Bronkhorst & Akkerman, 2016). This has been shown for fieldtrips (Rajala & Akkerman, 2017), schoolwork at home (Hedegaard, 2012; 2014) and when interacting with family during dinner (Barron, 2006). In line with this notion of interest experience across-contexts, Phelan, Davidson, and Cao (1991) reported how some adolescents find it difficult to make connections between home and school in terms of who they are and what they like to spend their time on. As a result, adapting to the school demands might be difficult, often resulting in disengagement from school in general. Although research has reported on ways to (re)establish continuity between in- and out-of-school contexts (Akkerman & Bakker, 2011; Bronkhorst & Akkerman, 2016), teachers can find it hard to connect to the unique backgrounds, abilities and expertise that adolescents bring to the classroom.

Present study

By investigating how school is reflected in adolescents' interest experiences in daily life, we expect that the role of school in interest will become visible in a more extended and nuanced way than previously described. In order to increase our understanding on this matter, we will use an experience sampling method to grasp *all* interest experiences that arise in daily life and which reflect adolescents' potentially idiosyncratic ways of relating their interests to school. The research question we posed, was: *how is school reflected in adolescents' interest experience(s) in daily life?*

4

METHOD

In this experience sampling method (ESM) study, adolescents reported multiple times per day on their interest experiences in daily life for a total of eight weeks over a course of 10 months, i.e. one school year.

Participants

Participants of this study were 44 adolescents (60% girls, 40% boys) from the higher educational levels of four different schools in the Netherlands, aged 14-16 years in the period of data collection. At the beginning of the study in September 2016, our participants just started grade 10 in the higher secondary educational levels in the Netherlands. All participants took part in our study voluntarily. Informed consent was obtained from all individual participants and their parents before entering the study.

Instrument

A smartphone application called *'inTin'* (Akkerman & Bakker, 2012-2014) was used as a personalized ESM. ESM has proven to be useful for obtaining empirical data on psychological states, daily activities, and social interactions (Csikszentmihaly & Larson, 2014), and entails that participants' experiences are measured in a systematic and momentary fashion.

At the start of each data collection period, participants entered all topics and activities that they preferred to spend their time on, as well as added the social contacts they saw regularly or were important to them. Participants received signals on their phones every two hours to answer questions about interests they had just engaged in. If adolescents had engaged in an interest, they reported what they were doing/thinking/talking about, with whom they shared their interest, and why they found it interesting; together we call these elements an *interest event*. If they had not engaged in an interest, they could go to the end of the report immediately. Participants were beeped every two hours during waking hours, up to eight times a day. Interests or social contacts could be added to the list every time. We have included an excerpt of our data in Table 4.1 to illustrate how such an event is represented in our data. These are four interest events reported by Kirsten (all names used are pseudonyms) on the 9th of September 2016. For a more elaborate description of the instrument we used, see Akkerman and Bakker (2019) or Slot et al. (2019). The study contains four data collection periods with a duration of two weeks spanning one school year (September 2016 – December – March – June 2017). In total, our participants reported 11058 times, of which 7239 interest events[1] completely (i.e. answered all questions), ranging between 63 and 307 interest events per participant across the four data collection periods.

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1   They reported to not have engaged with an interest in the past two hours an additional 3819 times.

Table 4.1. *Data excerpt representing one day of reporting by Kirsten*

Date and time	Interest label	With whom?	What were you doing/ thinking/talking about	Why did you find this interesting?
9-09-16 14:43	Biology	Classmates	Teacher explained about the difference between congenital and learned behavior in animals	Understanding the difference between these behaviors. Why they show the behavior and how to trigger it.
9-09-16 17:01	Music	Alone	I tidied up my room with music in the background and looked for new songs on Youtube	Listening to music helps to make tidying up more fun, it makes me enthusiastic and I like discovering and listening to new music on Youtube
9-09-16 19:28	Working	Sharon	Helped customers, sat behind the counter and chatted with Sharon	Knowing what's going on with Sharon, building a relationship with colleagues. Understanding customers, knowing what they want, and keeping everything neat in the store
9-09-16 21:40	Netflix/ TV	Alone	I watched the season finale of Arrow on Netflix	How the episodes built up towards this moment. All kinds of mysteries are solved and at the same time new problems arise for the following season.

Note. The data were translated from Dutch to English

Procedure

Prior to the first data collection period, participants received a 1.5-hour instruction during which we discussed what interests are (i.e. anything that they enjoy spending time on, including thinking about objects of interest) and how to correctly use the application '*inTin*'. Participants checked their connectivity, experimented with completing questions in the application and asked any questions they might still have. After practicing, all participants agreed to take part in a pilot study in order to be prepared for the daily task of reporting activities.

Every participant was supported by a "coach": a research assistant assigned to them at the beginning of the study. Based on daily monitoring of participant progress, these coaches were instructed to adaptively create a sphere of positive encouragement ("Good job, you are almost halfway!") and/or assist participants in reporting sufficiently

and elaboratively ("Do not forget to report your interest events this morning/afternoon/ evening: Did you spend time on any interesting topics or activities?").

Participants were offered financial compensation (25 €) for every data collection period if they fulfilled payment criteria as follows: adolescents should fill out (1) at least three reports a day, (2) spread throughout the day (i.e., morning, afternoon, and evening), (3) with clear and elaborative comments *in the case* they experienced interest, and (4) having added at least ten contacts and two different social groups to map their ego-network upfront to their mobile application. Ethical approval for this study was received from the ethical review board of the Faculty of Social and Behavioral Sciences of Utrecht University (FETC15-035).

Data analysis

To identify 'ways' in which adolescents' interests reflected their potentially idiosyncratic ways of relating to school, we first segmented the data into interest events that involved school in some way. This was done by screening each participant's interest events for references to school, including, but not limited to school, lesson, teacher, classmate, break, field trip, homework test, grade, etc., based on archetypical dimensions of school as postulated by Bronkhorst and Akkerman (2016, p 22). All interest events containing a reference to school, were selected. Of the in total 7239 interest events, 2000 events referred to school in some way, the percentages between all and experiences referring to school ranging between 0 and 68% across participants. All adolescents referred to school in their interest experiences, except for one (see Results section).

After segmentation, the data was analyzed thematically (Braun & Clarke, 2006), sequentially moving from open to axial and eventually selective coding. In the open phase, we coded the selected interest events in terms of *what* interested the participant (i.e. *interest labels* like The Hague trip, Geography, Math, but also gaming), in *which situations* (e.g. class, breaks, homework, co-curricular activities, tests, or leisure activities) and the *role of school* in their interest experiences (e.g., triggering, supporting and/or distracting from interest). In the axial phase, the role of school was foregrounded by comparing and contrasting adolescents' interest experiences, both within and across persons, on references to the object of interest (i.e. the *what*) and the situations in which the object was engaged in (i.e. the *where*), as school can be part of the object

(e.g. science) as well as the situation (e.g. being in class). Eventually, this yielded three manifestations of school in the interest experiences of adolescents. In our final, selective coding phase, we compared these manifestations with the literature on school as a practice in daily life in connection to other practices (Bronkhorst & Akkerman, 2016; Hedegaard, 2012) and the literature on object engagement (Akkerman & Bakker, 2019; Barron, 2006; Prenzel, 1992). Below, we will describe the ways in which adolescents referred to school in their interest experiences, following from both the *content* of their interest-related activity (e.g. does it represent the curricular and co-curricular content or other content?) and the *practice* that they are engaging in (e.g. school or another practice?). Finally, we identified in what ways each of the adolescents in our sample referred to school in his or her interest experiences, and looked specifically into the case of Ann, as in her interest experiences no single reference to school was found. The examples from our data presented in the results section were all translated from Dutch to English.

Quality assurance

In order to ensure the quality of the data analyses in the study, an audit trail was carried out (Akkerman, Admiraal, Brekelmans, & Oost, 2008; De Kleijn & Van Leeuwen, 2018). An independent researcher working in the same research team as the other authors was asked to complete a formative audit. Before carrying out the audit, he was asked to independently segment the school events for one respondent, after which the selected events were compared to what the first author had segmented. Both researchers selected the same events as referring to school. The object of the audit was to check the visibility (transparency), comprehensibility, and acceptability of the results and, if needed, provide feedback on how the quality could be increased. The first author prepared an audit document describing the analysis procedure in detail, a data file with all raw and coded data, as well as a short summary of the introduction and the results section as a whole. The independent researcher concluded that the results are indeed visible, comprehensible and acceptable, and did some minor suggestions for language in and the structure of the results section to increase the clarity of the findings presented.

4

RESULTS

Our analysis revealed that adolescents referred to school in their interest experiences in three ways, reporting (1) interest *in* school, where adolescents showed selective interest in their school's curricular and co-curricular content (i.e. school as the object of interest), (2) interest *at* school, where adolescents showed interest in social and leisure content to enrich their time in school (i.e. school as context for interest), and (3) interest *after* school, where adolescents showed interest in social and leisure content as a way to recharge from and for school (i.e. school as a demanding practice in daily life). Below, we will outline the three ways that school was reflected in interest in daily life, using illustrative examples from our ESM data.

Interest in curricular and co-curricular content

Of the 44 adolescents involved in this study, 37 adolescents reported interest in the school curricular and co-curricular content (i.e. with school as object of interest). By curricular we mean all content referring to curriculum in adolescents' self-reported objects of interest (e.g. content areas like science, language, and social studies, as well as P.E. and arts), and with co-curriculum we refer to extensions of the academic learning program (e.g. field trips, exchange programs, theatre and sport events, also sometimes referred to as extra-curricular), as well as future orientation activities (e.g. exploring university study programs). Adolescents differed in the content they reported as object of interest or that they experienced as interesting, both in terms of *what* content they reported (e.g. math or English) and of how *specific* the represented content was (e.g. in order of increasing specificity: school, math or histograms). Below, we will discuss our results with regard to this selectivity in content and abstraction level.

Selectivity in reported objects of interest. Adolescents differed in the specific domains or subjects as elements of a school discipline they reported. Evelyn, for example, had a predominant interest in *arts* as a school subject: except for P.E., this was the only school subject she reported as her interest. She oftentimes reported having a preference for freely moving around in or outside the classroom instead of having to pay attention to the teacher (as often is the case in [Dutch] academic classes). For example, when she is shooting a video for her arts project, Evelyn stated "it was a fun assignment and meant that we did not have to stay in class". Another example is Sarah, who predominantly

reported interest in the *STEM* domain (i.e. the school subjects *chemistry, physics, biology, math*) because she likes the type of active learning involved in these classes. In a biology class, she is working with a microscope and states: "it's interesting because you can really see how it works, instead of having it explained to you". In a practicum in chemistry class, where she has to work with substances, Sarah also experienced interest because "you can see for yourself what happens in reality, and that makes it interesting but also easier to learn for me". While adolescents sometimes selected the same objects of interest (e.g. two individuals both report to be interested in 'chemistry'), what they experienced as interesting was never identical. For example, where Dory experienced interest in *chemistry* because she likes to learn scientific explanations for daily phenomena, Lily found *chemistry* interesting because of the 'puzzles' that are involved with working in the chemistry domain.

Although adolescents reported interest in learning content related to particular subjects or domains, not every class or homework situation associated with that subject or domain was experienced as (equally) interesting. For example, Max was interested in *geography*. As can be deducted from Figure 4.1, when he is working on a project with classmates, he experienced interest because "It is a fun project, we have to make a travelogue of South-Korea". But in another situation, when he is studying for a test on climate change, he stated that "climate change is interesting, but there are other topics in Geography that I find more interesting". Another adolescent, Ilya reported an interest in *theatre*; having to perform a show with school at the end of the school year, he sometimes experienced positive emotions: "it went very well, so I am happy!" but not in each situation: "I am so tired, and I have nothing to do in this second act, so it's boring".

The co-curricular content that adolescents mentioned as their object of interest was sometimes experienced as interesting in situations both in- and outside of school. These objects often suggested activities that could be engaged in both in and outside of school, like reading, hockey, doing sports, playing piano/guitar, and travelling. For example, Manuella had an interest in *reading*. In her leisure time, she for example reported to be reading Harry Potter, stating that "it's interesting because the leading character is in huge trouble". When reading The Hunger Games for English class, she makes explicit that "it's interesting to read it in English this time". And for her Dutch class, she had to

4

read a Medieval book: "It's interesting, because you have to read really carefully in order to understand the story". Manuella thus seemed to experience interest in reading in the context of school as different from reading in her leisure time. However, sometimes an adolescent experienced an object in the context of school as less interesting because of the obligatory nature of the practice. Romana had to read a book for school, and she reported: "I don't think the topic is interesting, so I don't like to read this book as much as other books. I don't like that I *have* to read this book for school, because normally I like reading but NOT books that are chosen by school. However, I do like reading before going to bed". Hence, we found that adolescents showed selectivity in the curricular and co-curricular content they reported as interesting, not only in terms of subjects/domains but also in and across (learning) situations and contexts.

Selectivity in reported object-specificity. The curricular and co-curricular content that adolescents reported as their interest also varied in terms of object-specificity, meaning that objects of interest differed in their abstraction level. Although adolescents did refer to school subjects as their interests (e.g. biology, physics, geography, English), we also found they reported interest in school in a categorical sense (e.g. 'going to school' or 'school'), or 'general' activities associated with participation in school (e.g. school breaks, being in class, talking to classmates, joining the adolescent council, doing an exchange program) as well as activities associated with school work (e.g. homework, studying, presenting, making assignments, following instructions, or receiving feedback). Adolescents could also report interest in more specific (subject) content like shooting a video for an arts project, working with a microscope in biology, writing an English poem, learning about world war 2, Maoism, or vectors.

In the following examples, we will illustrate how the different abstraction levels can all represent science content, in this case related to the domain of chemistry. Porter was interested in *school* in general. He reported in different situations to experience interest in chemistry: "I talked to Fabrice about chemistry; I wanted to know if I understood the assignment correctly". But in other situations, he also reported to be engaged in talking about school, cycling to school, playing a soccer tournament in school as well as engaging in English, P.E., arts and math classes (i.e. largely any school subject is reported as interesting). Hence, the chemistry content Porter reported as interesting seems only one aspect of his broader interest in 'going to school'.

In contrast to Porter, Lily reported interest in the school subject *chemistry*. She reported to be engaged in chemistry four times; three times she is studying for a test and one time she tutors another adolescent. Her interest experience revolved around her preference for the domain of chemistry: "It's my favorite subject and I am also very good at it", and specific aspects of chemistry: "I like puzzling with carbon substances".

Finally, Karen was interested in *electrons*, which is a topic that is dealt with in chemistry class. When she is studying for a chemistry test, she states "I find it interesting how much possibilities you have with an electron, how you can apply it in different ways, and I like puzzling with them". She reported to experience interest in other chemistry topics three times, always reporting that she likes the novelty of the topic or activity (e.g. thinking of questions that could be posed in the test) or the puzzling with the content at hand (e.g. formulas). Thus, we found that the way that adolescents characterize their interest in curricular and co-curricular content also reflects selectivity.

Interest at school: enriching time spent in school

In addition to adolescents' interest in the curricular and co-curricular content, i.e. where school is referred to as the object of interest, we found that adolescents also referred to interest *at* school, with school as the broader context where they engaged in their interests. In total, 29 out of 44 adolescents reported interest experiences at school, not related to curricular or co-curricular content, such as socializing with their peers or engaging in leisure activities.

Apparently, adolescents tend to engage in social and leisure interest activities to enrich their time in school. We found this both in situations where it might be expected (e.g. school breaks, free periods, but also field trips) and in situations where this might be typically regarded as being 'off-task' (e.g. during class or homework). Adolescents referred to socializing with peers in situations where school provided opportunity to spend time and interact with them, like school breaks and class outings or field trips. For example, Michelle was interested in *school breaks* because she is able to talk to her friends: "It's nice to have a break, not having to follow lessons and being able to talk to friends". And Monty reported during a field trip for *biology* that he "liked going there together and completing it together with friends". The opportunity to be with friends thus seemed to enrich time spent in school. Adolescents also reported interest

in socializing with peers while participating in class, thereby orienting on something other than the curricular content provided in that situation. For example, Anna has an interest in *talking to friends* and reported multiple times to be chatting during class, stating that "we talked about the weekend, making a lot of jokes" or "it was so much fun, we laughed a lot".

In addition to this, adolescents reported interest in activities that would typically be seen as 'leisure' during class or homework. For example, Max reported to be *drawing* in class: "I have been drawing during global studies. We did not do that much during class, so it was fun to draw instead". Another example is Nathaniel, who is interested in *gaming* and reports regularly that he is playing games during class because "we were done with our work so instead of being bored we played BBTan". Both examples show how adolescents experience interest in leisure content in a way that enriches their time spent in school. This way of orienting to other content illustrates how adolescents can relate to school in their interest as a context for broader participation, where adolescents are not only interested in learning, but also in leisure and socializing activities that can be associated with being in school.

Interest after school: recharging from and for school
Finally, adolescents reported to engage in interests *after* finishing school or homework as a way to recharge from and for school, such as leisure activities (e.g. gaming, watching Netflix, listening to music) as well as social activities (e.g. talking about school). In total, 21 out of 44 adolescents referred to school in interest in this way, reflecting a need to deal with the demands put on them by school (i.e. school as demanding practice in daily life). After time spent in school or on studying, they reported to engage in these activities to process everything that happened (e.g. talking about their day at the dinner table), or to unwind and reload for the next day (e.g. listening to music while cycling home from school).

4

	13-03-2017 (16:17)	23-03-2017 (09:19)	08-06-2017 (08:14)	09-06-2017 (15:24)
Timestamp				
Object of interest label	Geography	Geography	Geography	Geography
Situation	Studying for a test	Working on a project	Working on a project	Working on a project
Interest experience	"Climate change is interesting, but there are other topics in Geography that I find more interesting"	"It is a fun project, we have to make a travelogue of South-Korea".	"It's a lot of work, but it's still interesting."	"It's becoming a lot of work and that makes it more boring"

Figure 4.1. Example of four interest events related to Max's interest in geography

Adolescents' interest experiences in such situations were typically characterized by a positive state, such as having fun, feeling relaxed. For example, TJ, who reported an interest in *watching Netflix,* stated in a particular situation that he "watched a fun episode of Breaking Bad to relax after all the homework that I've done. Rewarding myself a bit in this way". This is different from another situation that was not coded as school in interest, where he experienced a similar positive state but without referring to school: "I really like this series; interesting that they can make it so thrilling!" And Porter with his interest in *gaming* played League of Legends with his friend Jeremy while on a break from learning physics: "a short break to get all that physics out of my head; it's fun to play for a little while after all that studying", whereas in other situations he reported that he likes to play with his friends, in a team, and try to win and become better at the game. Finally, Lynn reported an interest in *cycling*, where she generally experienced interest in talking to her classmates about (the) school (day) when cycling home: "we had a conversation about school, how our day was and stuff. It's nice to talk about school and support each other in things". Hence, adolescents seemed to engage in social or leisure activities in order to rejuvenate after a school day or studying. Both activities can be functional for participating in school, in that these adolescents feel they are better able to concentrate on their learning later on.

Intra-individual patterns

We started this study to provide a person-centered perspective on the role that school plays in interest experience in daily life. To this end, we have included Table 4.2, showing the intra-individual patterns in the ways in which adolescents referred to school in their interest experiences in daily life. We found that of the 44 adolescents participating in this study, four out of five referred to school in their interest activities in multiple ways, i.e. by reporting interest *in* school, *at* school and/or *after* school. Moreover, a quarter of all adolescents referred to school in all three ways, indicating school played a multifaceted role in their interest experience in daily life. Six adolescents only reported interest in the curricular and co-curricular content (i.e. school as object of interest), three adolescents only reported interest at school as a way to enrich time in school (i.e. school as context for interest) and one adolescent only reported interest after school as a way to recharge from and for school (i.e. school as a demanding practice in daily life).

We deem it important to report a bit more extensively on one of the adolescents in our sample (Ann), as she did not refer to school in her interest experiences *at all*. She reported 154 times in the *inTin* application to not have experienced anything interesting in the past two hours, some of which were at times which very probably were school hours, but also outside of school hours. In total, she reported 71 interest experiences across the four data collection periods, with 27 different objects of interest. The object of interest that she reported most, was 'work', as she works regularly in a supermarket to earn money, but she is also interested in soccer, water skiing, watching Netflix/films, shopping, and going out with friends. All of these interests appeared outside school hours in evenings and weekends and were not placed in the context of school in any of the ways that we described above. Hence, Ann is broadly interested, but according to what she reported as her interest experiences, school appeared to play no role in her interest in daily life.

Table 4.2 *For every participant (n = 44), sex (male, female), percentage of school-related interest events, and if a way in which school is reflected in interest experiences was found for this participant (x)*

Respondent id (and pseudonym)	Sex	School-related events (%)	Interest in school	Interest at school	Interest after school
187 (Monty)	m	39%	x	x	
193	m	16%		x	
195	m	8%			x
198	f	64%	x		
199	f	33%	x	x	x
200	m	19%	x		
202	f	38%	x	x	x
203 (Michelle)	f	19%		x	
205	f	29%	x		
206	f	16%	x	x	x
207	f	16%	x	x	
208	f	15%	x	x	x
211 (Karen)	f	36%	x	x	
212	m	11%	x	x	x
213 (Manuella)	f	19%	x		
217	m	5%	x		x
218	m	13%	x		x
222	f	47%	x		
225 (Kirsten)	f	18%	x		x

4

Respondent id (and pseudonym)	Sex	School-related events (%)	Interest in school	Interest at school	Interest after school
226	m	20%		x	
227	m	30%	x	x	
229	f	31%	x		x
230	f	20%	x	x	x
240 (Nathaniel)	m	8%		x	x
242 (Porter)	m	30%	x	x	x
244	m	4%	x	x	
246 (Dory)	f	48%	x	x	
248 (TJ)	f	22%		x	x
249	m	7%	x		x
250	m	46%	x		x
251	f	55%	x	x	
256 (Lily)	f	36%	x	x	
258 (Romana)	f	43%	x	x	x
260	m	34%	x		x
261	f	18%	x	x	x
262	f	11%	x	x	x
269 (Anna)	f	41%	x	x	
270	m	3%	x	x	
272 (Ilya)	m	53%	x	x	x
275 (Evelyn)	f	68%	x		
276 (Max)	f	43%	x	x	
277	f	35%	x	x	
279	f	35%	x	x	
284 (Ann)	f	0%			

DISCUSSION

In the literature, school is typically *not* seen as the object of interest for adolescents or as a context for developing interest (e.g. Larson & Verma, 1999). In this study, we aimed to present an extended and nuanced understanding of the role of school in adolescents' interest experiences in daily life. Using a person-centered experience sampling method, we asked 44 adolescents to self-report their interest activities in daily life. To illuminate the specific and idiosyncratic ways school can be related to adolescents' interest experiences in daily life, we analyzed the 2000 interest experiences wherein adolescents referred to school in some way.

School was reflected in these interest experiences in three different ways, together showing the adolescents' interests and the role of school therein to be idiosyncratic. First, we found that adolescents referred to interest *in* school, though being selective in what curricular and co-curricular content they experience as interesting (i.e. with school as object of interest). Interest in the school curriculum and co-curriculum could be related to a particular school subject but could also revolve around particular topics or activities within a subject domain. These different abstraction levels largely represent the three dimensions as postulated by Haüssler and Hoffman (2000) and Gardner and Tamir (1989) for describing interest in physics and biology: people can show interest in a subject or subject domain, e.g. physics, interest in the activity related to the subject, e.g. calculating, and interest in a topic related to a subject, e.g. robotics. In addition to this, we found that activities sometimes extend a subject or domain, in that an adolescent could also be interested in overarching activities like 'doing homework' or 'going to school'. A methodological consequence for future research that we can derive from this is that when predefining the objects of interest, interests on a more specified or general level than the school-related subjects remain underreported (see also Krapp, 2002; Ufer et al., 2017).

Second, in addition to reporting interest *in* school, adolescents also referred to engaging in interests *at* school that were not related to the content offered by school, as a way to enrich their time in school (i.e. with school as a broader context for interest). This illustrates that while participating in school every day, adolescents also work on other developmental tasks such as acquiring a like-minded peer group (Bergin 2016). Spending time with friends in school can be a source of enjoyment, even for adolescents who are disengaged from learning in school (Lumby, 2011).

Third, adolescents reported interest *after* school, referring to the need to recharge from and for school, by spending time on social and leisure activities (i.e. school as demanding practice in daily life). According to Deschenes (2011), leisure time can indeed provide opportunity to 'heal' from the daily 'productive' activities, like school, by engaging in activities that are self-determined (Kleiber, Larson, & Csikszentmihaly, 2014). More specifically, Iwasaka, Messina and Hopper (2018) described how a key function of leisure is not only to experience joy, but also to lead a 'composed' life, meaning that leisure time can be useful for self-restoration and maintaining the balance between engaging

4

in interest activities that are characterized by 'on-task' and 'off-task' behavior. Hence, our study has shown how adolescents use their leisure and social interest activities to restore from and reload for their learning in school. Together, these findings have contributed to gaining a more nuanced understanding of the role that school plays in adolescents' interests in daily life.

Finally, by studying the intra-individual patterns across the 44 adolescents, we found that four out of five adolescents referred to school in interest in multiple ways. The others' interest experiences reflected a single way, with one adolescent not mentioning school at all. In contrast to previous research that has mainly reported a lack of adolescents' interest in school, this study confirms recent work by Akkerman et al. (2019) and Slot et al. (2019), that when adolescents are asked to openly self-report interests, around 28% of the interest experiences refers to school. However, this study has also shown how adolescents differ in terms of the extent to and the ways in which they refer to school in their interest experiences (see Table 4.2.). Adolescents experienced specific content both in and out of school as interesting and made sense of their time in school or deal with school demands in idiosyncratic ways.

We have empirically shown how school can represent 'many things at once' (Bronkhorst & Akkerman, 2016). Our findings show that although adolescents engage in their interests in idiosyncratic ways, for example visible in how they experience different situations of engaging with an object (e.g. a class could be boring despite one's interest in the overall subject), patterns of interest-based dynamics can be identified across persons. The patterns we found confirm how complex intra-individual processes, such as the role that school plays in interest experiences in daily life, can be understood by studying the dynamic interplay of individuals (i.e. personal preferences for particular content) and their experiences in different situations (i.e. situation-specific aspects like task complexity) (Sansone & Smith, 2000; Tsai et al., 2008; Knogler et al., 2015). In the present study, by taking an open, person-centered perspective and measuring interest experiences *real*-time, we have seen how interests are not static, trait-like entities that sustain no matter the content one engages in, but instead are dynamic, with engagement and sustainment depending on an individual's past and future interest experiences (Slot, Vulperhorst, Bronkhorst, van der Rijst, Wubbels, & Akkerman, 2019).

Limitations and future research

Results of this study have to be interpreted in light of some limitations. First of all, we studied the relation between school and interest for adolescents with higher abilities than average, as our sample consisted of a limited number of individuals from the upper levels of secondary education in the Netherlands. This might have impacted the results because such a group might be more engaged in school in general than adolescents from lower levels (Shernoff et al., 2014). Future research is needed to determine if school is reflected in similar ways in the interest experiences of adolescents from lower educational levels, or adolescents who are sampled via other institutions and organizations (e.g. Church, sports).

The person-centered approach that we used meant that adolescents could self-define their objects of interest, hence were free to choose any label for their interests. Although we found that adolescents' interests had a comparable structure (i.e. formulated in terms of school subjects and activities), some adolescents' interests appeared to be labelled more in terms of broad categories (e.g. school), and other adolescents' interests were labelled more in terms of topics (e.g. electrons). The question rises whether these differences in labelling are related to how their interest can be triggered or supported. Future ESM interest research should be directed at this, for example by having adolescents elaborate on the interests they add to the application (e.g. for me, this interest means…), in combination with follow-up interviews in the school context (i.e. to grasp their momentary experiences of interest).

Because our participants were financially rewarded for reporting a minimum number of times a day, it might be possible that they were over-inclined to report an interest experience, leading to an overestimation of their interest experience in daily life. Our data showed that adolescents added an interest event every two out of three times that they were triggered by the mobile application *inTin*. On the other hand, adolescents differed strongly in the extent they reported an interest event or not, varying between 0 and 70 percent in our sample (e.g. 70% of the reports in *inTin* were interest events). This is something that needs to be taken into consideration for future studies on interest in daily life.

Although scholars have pointed towards ESM research as a valid approach (e.g. Bergin, 2016) this method in the context of interest is still in its infancy. One of the downfalls of ESM is its reliance on self-reports: are people trustworthy in what they tell us about their experiences in daily life? The moment-to-moment measuring of interest experiences over a longer period of time should add to the trustworthiness of these self-reports. Future studies could benefit from additional measurements like observations (Csikszentmihaly & Larson, 2014) to gain an even more detailed understanding of how adolescents relate themselves to school in terms of their interest development and what this means for supporting their academic engagement. However, observations are more difficult to organize over a longer period of time and across different contexts.

Implications for research and practice

Whereas it is often assumed that schools are fully responsible for triggering and maintaining adolescent interest (e.g. Renninger et al., 2018; Shernoff et al., 2014), this study has shown that the role of school in adolescents' interest in daily life is more extended, but also more nuanced than previously reported in interest research. Our findings also indicate that adolescents themselves can actively orient their attention to learning and/or leisure content in and out of school. Although a lot of useful empirical work has been done on connecting in- and out-of-school interests for academic learning purposes (e.g. Reber, Canning, & Harackiewicz, 2018, Walkington & Bernacki, 2015), it seems imperative to focus more on the orientations of the adolescents towards their own learning and development and the connections that they make between in- and out of school in this process. On the other hand, we have also found indications that for some adolescents, school is not an object of interest nor a context where they spend time on other interests, despite the large amount of time they spend there (see also Bergin, 2016). For one adolescent, the role of school was not visible in her reported interest experiences at all, and one other adolescent only referred to school in interest in their need to recharge from and for school. Perhaps, these adolescents did not perceive connections between what school had to offer in terms of opportunities for learning and socializing and their preferred engagements in daily life (Phelan et al., 1991), or they were not able to establish social relationships that enhance enjoyment in school (Gorard & Huat See, 2010). It illustrates that adolescents are different in how they relate to school and that (re)establishing continuity between contexts in

order to prevent disengagement should be a priority for some students (Bronkhorst & Akkerman, 2016).

Our findings suggest careful consideration of 'general' triggers that educational practice can use in order to support interest development in school and connect it to out-of-school settings. Based on our results and in line with Renninger et al. (2018), we would like to stress that simply 'inserting' these triggers into the curriculum does not make sense if the idiosyncratic nature of the interest is not accounted for.

4

Mechanisms of interest sustainment

ABSTRACT

Sustaining an interest leads to a wealth of positive outcomes for adolescents. Whereas previous research has often attributed interest sustainment to deliberate reasons of the individual, one may argue that processes related to the daily routines and practices might also play a role in sustainment. The present study aims to provide a detailed and differentiated account of interest sustainment, which may shed light on how interest may be sustained beyond the deliberate goals and needs of the individual. In order to do so, an experience sampling method was applied in which 56 adolescents filled in a smartphone application six times, for a period of two weeks, with intervals of three months, to report *all* their moment-to-moment experiences of interest. By analyzing the content of these 8281 experiences of interest of 334 sustained interests chronologically, we found six mechanisms of interest sustainment. Two mechanisms were found in which individuals deliberately steered their sustainment, while four mechanisms were identified in which the object and/or practice seemed to play a role in the sustainment. Our findings thereby demonstrate that future studies, in order to understand interest sustainment and development, should look beyond the active role of the individual in sustaining interests.

Keywords: mechanisms of interest sustainment; experience sampling method; interest development

INTRODUCTION

Interest plays a significant role in adolescents' learning and development (Renninger & Hidi, 2017). Interest can be defined as a preferred engagement of a person with a specific object (Krapp, 2002). Objects of interests can be topics, ideas, activities or events (Akkerman & Bakker, 2019). Adolescents that experience interest show high intrinsic motivation to learn (Harackiewicz, Durik, Barron, Linnenbrink-Garcia, & Tauer, 2008; Hidi & Renninger, 2006), experience positive emotions, and over time report high well-being (Schulz, Schulte, Raube, Disouky, & Kandler, 2018; Renninger & Hidi, 2017). This is an important reason to try and explain when individuals' interest is triggered as well as *sustained* over time, where sustainment in terms of Prenzel (1992) would be defined as a "prolonged relation with an object of interest that involves repeated episodes of active engagement over time" (p. 78).

Previous psychological interest research has often attributed sustainment solely to the drive of the individual: interest is often associated with an individuals' expertise (e.g. Renninger, 2000), goal pursuit (e.g. Hofer, 2010) and identification with the object (e.g. Krapp, 2002; Deci, 1992). These studies stress that an interest is sustained if the interest is compatible with an individual's goals and values (Krapp, 2002). Although psychological research shows that individuals deliberately sustain interests (Hofer, 2010; Krapp, 2002*)*, socio-cultural, cultural-historical and ecological research has indicated that focusing on the individual alone is not sufficient to understand interest sustainment. Interests are experienced in multiple ways, suggesting that there may also be different ways in which an interest may be sustained over time (Draijer, Bakker, Slot & Akkerman, 2020; Akkerman, Vulperhorst, & Akkerman, 2019). More specifically, social practices and routines may play more of a role in interest sustainment than previously acknowledged (Azevedo, 2011; 2018; Akkerman & Bakker, 2019). Gaining insight into the different mechanisms of interest sustainment might lead to a detailed and differentiated understanding of how interests develop over time as well as provide insight for educational practice in the multiple processes that play a role in adolescents' interest development.

5

Multiple ways of sustaining interests

Interest research focused upon interest sustainment, has been oriented mostly to the way individuals pursue their interests more or less deliberately, for example in terms of achieving personal goals (Hofer, 2010; Hidi & Renninger, 2006), satisfying personal values or needs (Krapp, 2002; Prenzel, 1992) or in terms of expressing their personal identity (Krapp, 2002). These studies portray the individual as the agent responsible for sustaining interest, suggesting this to occur independently of available structures and opportunities in daily life. This assumption is even included in the widely used concept 'individual interest', as the individual is assumed to deliberately seek repeated engagement with his or her interest (Hidi & Renninger, 2006). Individual interest is predominantly used in literature to describe the sustained interests of individuals.

However, recent studies have found that sustained interests can be experienced in multiple ways (Akkerman et al., 2019; Draijer et al., 2020). Based on a latent profile analysis of indicators that seem to underly individual interest, these studies have found that engagement for some interests is associated with high personal value, flow and levels of agency (self-initiation), suggesting the individual may deliberately direct and sustain interests. At the same time, they found that individuals engaged with interests in a more routine way, as some interests were associated with low personal value, flow, and agency (Akkerman et al., 2019; Draijer et al., 2020). For example, one might have the long-term habit of listening to music in the shower every day, without deliberately directing the sustainment of this interest. There are indications that interests sustained in this way, may more likely represent ordinary aspects of daily life, like watching television or eating, suggesting that not only the individual but also the individual's daily life rhythm and routines might influence sustainment (Slot, Akkerman & Wubbels, 2019; Larson & Verma, 1999).

These findings align with interest research from socio-cultural and cultural-historical perspectives, highlighting that interests may be sustained because engagement is embedded in a particular community (Nolen, 2019; Azevedo, 2011). Belonging to a community provides opportunities as well as meaning and direction for sustainment (Azevedo, 2011; 2013). Over time, individuals might attune their preferences to the community's practices and conditions, developing their own distinctive patterns of engagement (Azevedo, 2011). Engagement may thus revolve over time around

participating in a community, as individuals might experience their participation as rewarding, without pursuing particular goals. For example, one might be singing in a choir every Tuesday evening in church. Engagement in this case may be largely context-dependent and might be abandoned as soon as the community stops to exist or changes (Akkerman & Bakker, 2019). Hence, research shows that there may be multiple ways of sustaining interest, suggesting that sustainment can best be understood by looking also *beyond* the deliberate reasons an individual provides for sustainment.

Mechanisms of interest sustainment

This shift towards understanding interest sustainment as being embedded in an individuals' participation in practices and routines across different contexts (see Akkerman & Bakker, 2019; Chesworth, 2018) implies one should also make a shift in how interest sustainment is studied. Sustainment has been typically studied through focusing on the reasons an adolescent provides for the sustainment of specific interests. This is problematic, not only because contextual processes may remain underexposed but also because interest sustainment may be expected to change over time (Prenzel, 1992; Valsiner, 1992). Narrative research has shown that adolescents might highlight different reasons for sustaining an interest over time (e.g. Holmegaard, Ulriksen, Madsen, 2015), confirming that focusing on the reasons in one moment in time may not fully capture how interests are sustained.

Therefore, one should focus on the processes or *mechanisms* involved in interest sustainment (see Maxwell, 2004). In order to identify these sustainment mechanisms, tracing how individuals experience interest across specific moments *over time* becomes pertinent (e.g. Chesworth, 2018; Prenzel, 1992; Ramey & Stevens, 2018). Based on human experience literature (Gillespie & Zittoun, 2013; Zittoun et al., 2012), we may argue that incorporating these moment-to-moment experiences into analyses allows the identification of various mechanisms involved in sustainment: individuals might provide explicit reasons for sustaining in an object *within* a particular moment in time, but mechanisms might also be revealed by studying all situated experiences of interest *chronologically,* considering similarities and prolongation of reasoning across experiences.

5

The present study

In order to gain a detailed and differentiated understanding of the mechanisms involved in interest sustainment we use a person-centered approach that was put forward by Akkerman and Bakker (2019). They posited that looking from the perspective of the individual towards how they experience interest in daily life may help to better understand how practices and situations shape interest over time. In order to identify interest sustainment mechanisms, the present study aims to trace adolescents' moment-to-moment experiences of prolonged interest in objects, as suggested by Prenzel (1992). Practically, our study provides insight in mechanisms of adolescents' sustained interests, even when the individual does not deliberately steer sustainment. The following research question was posed: *What mechanisms sustain adolescents' interests?*

METHOD

To trace experiences of interests over time we used the experience sampling method (ESM). This method has been proven useful for obtaining empirical data on psychological states, daily activities, and social interactions in a moment-to-moment fashion, making it possible to measure adolescents' experiences of interests multiple times a day (Csikszentmihalyi & Larson, 2014). Moreover, this is regarded a suitable method because individuals have to respond immediately after or even during an experience of interest, which avoids memory problems (Bergin, 2016).

Participants

Participants in this qualitative ESM study were drawn from a sample of 90 adolescents (see also Slot et al., 2019) who took part in six data collection waves between February 2016 and June 2017. Over 75% (*n* = 69) participated till the end of the data collection, but thirteen of these participants had one wave missing. The 56 remaining adolescents with complete data (18 boys, 38 girls) were 14-15 years of age in the period of the data collection. During the data collection, participants transitioned from grade 9 to grade 10. Adolescents were enrolled in four different schools from different regions in the Netherlands. All participants took part in our study voluntarily. Informed consent was obtained from all individual participants and their parents before participation.

Instrument

A smartphone application called *'inTin'* was used as an ESM, in which participants received signals on their phones every two hours (during waking hours) to answer questions about their experiences of interest (Hektner, Schmidt, & Csikszentmihalyi, 2007). If they experienced interest, they had to report about it in an interest event. An interest event provided us with information on *how* they engaged in the object of interest, i.e. what they were doing/thinking/talking about, with whom they shared their interest, and *why* they experienced interest at that moment (i.e. their experience of interest). Such an interest event thus informed us about one's real-time experience with an object of interest. For example, Vera reported that she experienced interest in working at the 9th of September 2016 at 19:28. She explained that she was helping customers and chatting with her colleague Sharon. She reported to experience interest as she 'likes building a relationship with Sharon and learning to understand what her customers want'

Procedure

Data collection started in February 2016 and ended in June 2017. In total, our participants took part in six data collection periods of two weeks, which were held every three months (February – June - September – December – March – June). Prior to the first period of data collection, participants received a 1.5-hour instruction during which we discussed what interests are and how to correctly use the application 'inTin'. Participants practiced filling in the application and we allowed time to answer any questions they might still have. After the meeting, we asked them to take part in a one-week pilot study in November 2015 in order to be prepared for the daily task of reporting activities; all participants agreed. During this pilot study we mainly worked on optimizing the technicalities of the application and had daily contact with our participants, asking them how they were doing and providing them with feedback when needed.

At the start of each data collection period, participants had to enter all objects that they perceived as their interests (i.e. activities, topics, ideas or events that they preferred spending their time on). No predefined categories were made to allow participants to define their object of interest themselves. Moreover, they were asked to add all social contacts they see regularly or that are important to them. During data collection,

5

interests or social contacts could be added to the list each time a participant added an interest event. When participants subsequently received a notification on their smartphone, they first indicated whether they had done anything interesting. If that was the case, subsequent questions related to the interest event were asked (see the instrument section), if this was not the case, they could go to the end of the report immediately. Every participant was supported and motivated by a research assistant during each data collection period. These assistants acted as coaches, and were instructed to encourage ("Good job, you are almost halfway!") and help participants to fulfill the criteria of payment ("Do not forget to report your interests this morning/afternoon/evening: Did you spend time on any interesting topics or activities?").

 Participants were offered financial compensation for every data collection period if they fulfilled payment criteria (25 €). These criteria were as follows: (1) participants filled out at least three reports a day for two weeks, (2) these reports were spread throughout the day (i.e., morning, afternoon, and evening), (3) their reports were accompanied by clear and elaborative comments on why they experienced interest, and (4) participants added ten contacts and two different social groups to their mobile application. Ethical approval for this study was received from the ethical review board of the Faculty of Social and Behavioural Sciences of Utrecht University (FETC15-035).

Data analysis

Before analysis, we identified all sustained interests for each participant. In line with our definition of sustainment (Prenzel, 1992) we included interests that were actively engaged with over a relatively long period of time. Therefore, participants had to report their object of interest at least once in at least four of the six data collection periods (not per se each period, as interests can be latent for a while and then re-appear; Akkerman and Bakker, 2019), resulting in a hypothetical minimum of four events for analysis. We realized how this excluded not only short-term engagements, but also season-dependent interests that are sustained if you look over the course of multiple years (e.g. skiing, see Akkerman et al., 2019).

We regarded different interest labels (i.e. how a participant labelled an interest when adding it to the application) across data collection periods as the same object if the labels were similar in terms of the object of interest it represented (e.g. playing soccer

and soccer). In total, this resulted in an analysis of 56 participants, with 334 sustained interests (5.6 sustained interests on average per person) across 8281 reported interest-events, in total with a range between 4 and 171 events per sustained interest. We checked whether different types of interests (e.g. sports, media, school) were included in the analysis, to make sure mechanisms were not limited to a certain type of interest. A large diversity exists in terms of what types of interests were included in analysis (see Appendix 5.1).

After identifying the objects for analysis, we started thematically coding the interests of twelve participants (Braun & Clarke, 2006). First, we read through all interest events that belonged to the sustained interests of these adolescents and subsequently drew 'timelines' for each sustained interest of these twelve participants, as this allowed us to see how experiences of interest change, remain similar or build upon each other over time. Each interest event in a timeline included information on the interest label, what the adolescent reported to be engaged in (i.e. situational engagement), and why one experienced the object as interesting in that particular event (i.e. experience of interest). With regard to the question *why* it was interesting, we noticed that adolescents reflected on their experience of interest in the here-and-now (termed a momentary experience of interest) or by reflecting back on past or (imagined) future experiences with the object of interest (termed a moment-*surpassing* experience of interest; see Gillespie and Zittoun, 2013).

Secondly, we applied open coding to identify *chronological references* to past, present and future in each experience of interest, i.e. on being a momentary or moment-surpassing experience of interest, or a combination of both, as well as on *what* the individual referred to as interesting in their experience of interest. Thirdly, we explored themes in how adolescents chronologically *qualified* their sustainment. This was done separately for momentary and moment-surpassing experiences. When moment-surpassing experiences of interests were mentioned, qualifications could be directly coded (e.g. 'I have always liked playing the piano'), as adolescents explicitly referred to their past or (anticipated) future in their experience of interest. Concerning momentary experiences, qualifications could be identified by searching across the whole chain of interest events for similarities in chronological references (e.g. repeatedly mentioning 'It was fun to do', or 'it was enjoyable'). Axial coding was applied to all qualifications

5

by comparing and contrasting them, eventually identifying the mechanisms explaining interest sustainment (e.g. joy and fun were merged in enjoyment). Finally, we applied selective coding through checking and refining these mechanisms in the data of the remaining 44 participants with a confirmatory approach (see also Quality Assurance).

Quality assurance

To assure quality of the data analysis, several strategies were employed. First, analyses were done by the first two authors together, to check each other's interpretation and to come to final themes. Subsequently, themes and final mechanisms were discussed with the whole research team. This process of researcher triangulation may contribute to the credibility and confirmability of our results (see Guba, 1981). Second, to assure dependability, we asked the third author to conduct a formative audit after analyzing the second group of 44 participants (Akkerman, Admiraal, Brekelmans, & Oost, 2008; De Kleijn & Van Leeuwen, 2018). In this audit, the third author checked the data and our interpretation of the data and suggested minor changes in how we coded and named the final mechanisms, which we agreed upon. The most prominent change that was a result of the audit, was the adding of a sixth mechanism (i.e. progress valuation), that we did not identify as a separate mechanism after the first round of exploratory analysis. Third, the audit trail was repeated with an independent researcher who was not involved in this study but was working in the same research team in the department. She was given access to the data of all 56 participants including the coding and a description of our data analysis that is similar but more detailed than the above. She performed a *summative* audit to assure dependability and confirmability of the data analysis, where summative implies that her judgment could not be used to improve the study, but to validate the reported results (De Kleijn & Van Leeuwen, 2018). She indicated to understand the coding process and the subsequent results and had some minor suggestions on how to increase transparency and understandability of our analysis and result sections.

RESULTS

Based on the chronological qualifications that adolescents made in their experiences of interest, we identified six sustainment mechanisms (see Table 5.1). First, sustainment lay in individuals' goal setting; adolescents referred in their experiences of interest to

a future desirable state like wanting to master a skill or becoming better in something. This mechanism of *goal setting* was reflected in adolescents' *moment-surpassing* experiences of interest; adolescents qualified their experience of interest by referring to a goal (e.g. becoming a better piano player, learn to speak English), sometimes by additionally reflecting back on their growth since a previous engagement (e.g. improving my weaknesses). In some cases, goals were less explicit, as adolescents were fantasizing about possibilities in the future (e.g. I might want to live in England). Illustrating this mechanism of goal setting, Lazlo indicated multiple times when experiencing interest in hockey that he was working towards the goal of becoming a better hockey player (e.g. 'training is nice as I can improve my weaknesses', 'I see how much I have grown since last year', 'I can apply techniques in the game that I learned in training'). Sometimes, adolescents additionally made implicit references to the goal they set. For example, Lazlo stated 'we lost, but we did our best and that's good I think'. This may not reflect an explicit goal in the specific experience of interest, but can be understood in terms of his desired state of becoming a better hockey player.

Table 5.1. *Sustainment mechanisms including an explanation and illustrative examples of experiences of interest characteristic for the mechanism*

Mechanism of…	Interest sustainment resides in…	Example
Goal setting	An individual's setting of a goal (i.e. future desirable state)	"I want to become a better hockey player"
Biographical identification	An individual's identification with historical participation in an object	"I love playing the piano, I always have"
Progress valuation	An individual's valuing of knowledge or skill progression	"I learnt more about this topic/ Working in the lab helps you to understand how it works"
Chronotopical captivation	An individual's continuing curiosity in a storyline evolution	"I am eager to know how the story continues"
Engagement appreciation	An individual's repeated positive appreciation of engaging in an object	"It was fun/I enjoyed this/It was relaxing/We laughed a lot"
Substantive participation	An individual's sizeable and manifold participation in a practice like school	"I got a good grade"/ "I liked talking to friends in the break/the class on micro-organisms was interesting"

Second, sustainment lay in an individuals' identification with a historical participation in their object of interest. Similar to the first mechanism, this mechanism of *biographical identification* was reflected in adolescents' *moment-surpassing* experiences of interest,

where they recalled their personal history of participation with an object, or their love or liking for the content (e.g. 'I have always loved dancing'). An example of this mechanism can be found in Bram's engagement with gaming. Bram reflected in multiple experiences on how he just loves to play games, including specific parts of his object he seemed to identify with (e.g. ' I always like playing games after school', 'I just love sci-fi', 'Gaming is just something I like to do in my spare time'). Thus, adolescents can qualify their sustainment by referring to an image of themselves based upon their long-term engagement with an object (e.g. 'I am someone who loves to game'), as they express through their interests who they are and what they like. Both the mechanisms of goal setting and biographical identification reside in someone's references to his/her, sometimes distant, future or past.

Third, sustainment resided in individuals' continuous valuing of progression in knowledge or skills. This mechanism of *progress valuation* became apparent across multiple *momentary* and *moment-surpassing* experiences. Individuals qualified their sustainment in terms of their increasing knowledge or skills with regard to particular content (e.g. 'I know more now than I did before'), reflecting on personal growth that goes beyond the immediate situation. Yet, this progress appeared to be triggered and shaped by learning opportunities in the *situation*. This mechanism of progress valuation can therefore be distinguished from the mechanism of goal setting, as individuals were not deliberately pursuing a 'desirable state' in the future, but rather valued the progress they noticed in each situation. To illustrate this mechanism further, a part of the timeline of Zania's engagement in biology is illustrated in Figure 5.1. In her experiences of interest, we could not identify a goal, in that she is deliberately working towards becoming an expert in biology, but she rather seemed to value each time she learned something new about the domain biology. As can be seen from the figure, she reported to experience interest as she is 'learning about risks of sexual diseases' or 'I know more about ecologies now'. This mechanism thus seems to revolve around gaining new knowledge and skills over time and valuing learning opportunities in the situation, without formulating a clear goal pursuit.

Fourth, sustainment resided in an individuals' continuing curiosity in the evolution of a storyline. This mechanism of *chronotopical captivation* became apparent across multiple *momentary and moment-surpassing* experiences of interest, where adolescents

repeatedly referred to the evolution of a chronotope (e.g. watching the next episode of a series or the season finale; wondering who is going to be champion in the soccer competition). More specifically, adolescents referred in their experiences of interest that they were captivated by characteristics of an object; they continuously wished to know how the storyline of the object evolved over time. This curiosity towards the evolution of a storyline was most often found in objects that were designed to have clear and compelling storylines (e.g. books, series, games), but could for example also be found in objects that revolved around following a sports competition. As this mechanism could only be identified across multiple experiences of interest, we included another figure to illustrate this mechanism. As becomes clear from Figure 5.2, Laura reported to be interested in Netflix and focused in her experiences of interest on the main storyline of a series she watched. Her experiences of interest reflected back on previous engagements with her object (e.g. 'It's more exciting than last time, everything comes together now'), but mainly evolved around being curious what will happen in future engagements with the object (e.g. 'I wonder what will happen next time'). A chronotope may end (e.g. end of series), which often led adolescents to search for a new storyline. Often, they found periods in between storylines less interesting as they had to 'get into a new story' (e.g. "nothing exciting has really happened yet this season"; "it was not so interesting, the story is lacking"). This mechanism of chronotopic captivation thus seems to rely on the characteristics of the specific object that can catch one's interest (e.g. exciting writing style, cliff-hangers, unexpected happenings).

Fifth, sustainment lay in individuals' repeated appreciation of their engagement with an object. This mechanism of *engagement appreciation* became apparent across multiple *momentary* experiences of interest in which adolescents tended to repeatedly mention that they liked engaging with an interest in the moment. Adolescents reported in their momentary experiences of interest to experience fun, excitement, relaxation, or enjoyment when engaging with their interests. Often, this revolved around doing things together with others (e.g. peers, family, colleagues). To illustrate this mechanism further, we included part of Vera's engagement in music (Figure 5.3). Vera's experiences of interest repeatedly reflected why she appreciated listening to music, as this was relaxing or fun in the moment (e.g. 'A way to relax after a long day of learning', 'It was fun to discover new music', 'Music provides a good vibe for the party'). Her experiences of interest also revealed that adolescents can appreciate the moment by contrasting

the engagement to past or anticipated experiences. For example, while engaging in her interest in music, Vera reported she *anticipates* Christmas as she likes to get in the Christmas mood, *remembers* how fun the concert of Adele was last night and likes to discover *novel* songs. This mechanism thus seems to revolve around appreciating a specific object engagement in any given situation, where a situation can be appreciated because of the characteristics of the moment itself (e.g. presence of social others), or because it evokes certain memories, anticipatory thoughts or something novel/ something different than usual. This suggests that the characteristics of a *situation* (i.e. opportunities for engagement) become important for sustainment; each situation is different in terms of the opportunities it brings for engagement and how an individual interprets these opportunities.

Finally, sustainment resided in adolescents' substantive (i.e. sizeable and manifold) participation in a practice like school. This mechanism of *substantive participation* became apparent when looking at interests adolescents reported regarding school (e.g. learning, following lessons, school), although not all school-related interests were sustained in this way: adolescents could for example sustain in school through setting goals (e.g. 'school is important for my future'). Across their momentary experiences of interests, adolescents appeared to 'seek' something interesting in each situation (e.g. in a lesson, while doing homework), and what was interesting to adolescents seemed to diverge over time. As can be seen in Figure 5.4, where Nathaly's reported engagement in school can be found, her experiences of interest varied widely from moment-to-moment. These constant shifts in her qualifications imply that her experiences of interest in school were focused on characteristics of the specific situations (e.g. lessons, homework) she engaged in, without her explicating why she sustained in school in general (e.g. see Figure 5.4 where Nathaly regulates interest in presentations, self-study hours and specific subjects). Hence, this mechanism appeared to be connected to on the opportunities provided by the substantive participation for experiencing interest. As can be seen in Figure 5.4, this did not mean that no other mechanisms could be identified that sustained the interest (e.g. 'I always have liked arts'), but these mechanisms could not explain sustainment in a person's whole object of interest (e.g. school).

Figure 5.1. Visualization of part of Zania's moment-to-moment engagement in the sustained interest biology, illustrating the mechanism of progress valuation. *Note.* The underlined text highlights how Zania continuously values her progression in learning about biology.

Figure 5.2. Visualization of part of Laura's moment-to-moment engagement in the sustained interest Netflix, illustrating the mechanism of chronotopical captivation. *Note.* The underlined text highlights how Laura is continuingly captivated each time by the storyline of the series.

Figure 5.3

Date and time	Situational engagement	Experience of interest
13-02-2016 (16:23)	Listening to music under the shower	It's relaxing after all that studying
19-02-2016 (20:31)	I listened to music	It gives a cozy and sociable sphere to the party
04-06-2016 (09:00)	I thought about Adele's concert of last night	Thinking back on how great it was
05-09-2016 (16:47)	I watched new Beyoncé videos on YouTube	Discovering and listening to new songs; finding out if I like the music video
12-12-2016 (16:22)	I looked up Christmas music and downloaded it	I like getting in the mood for Christmas by learning these new songs
06-06-2017 (11:17)	Listening to music in the morning	Relaxing, it distracts me from the though day that lies ahead. Nice sing-a-long

Figure 5.3. Visualization of part of Vera's moment-to-moment engagement in the sustained interest music, illustrating the mechanism of engagement appreciation. *Note.* The underlined text highlights how Vera repeatedly appreciates her engagement in music in terms of gaining a positive state.

Figure 5.4

Date and time	Situational engagement	Experience of interest
05-09-2016 (13:09)	In Dutch class, someone presented on college funding	It was interesting, I learned new things
05-09-2016 (15:11)	We were working during a self-study hour	It was the first time and it went better than I expected
07-09-2016 (12:09)	Got my grace back in Economics class	We all have bad grades, which surprised me because he said this test is generally made well
09-06-2016 (13:22)	We had a nice chat in the school break	Femke is new at school, I was curious how she experienced it
10-06-2016 (09:40)	Following lessons	People had to give a presentation in French, nice to see that they did very well
14-06-2016 (11:52)	Following lessons	I like Arts and the project we are doing!

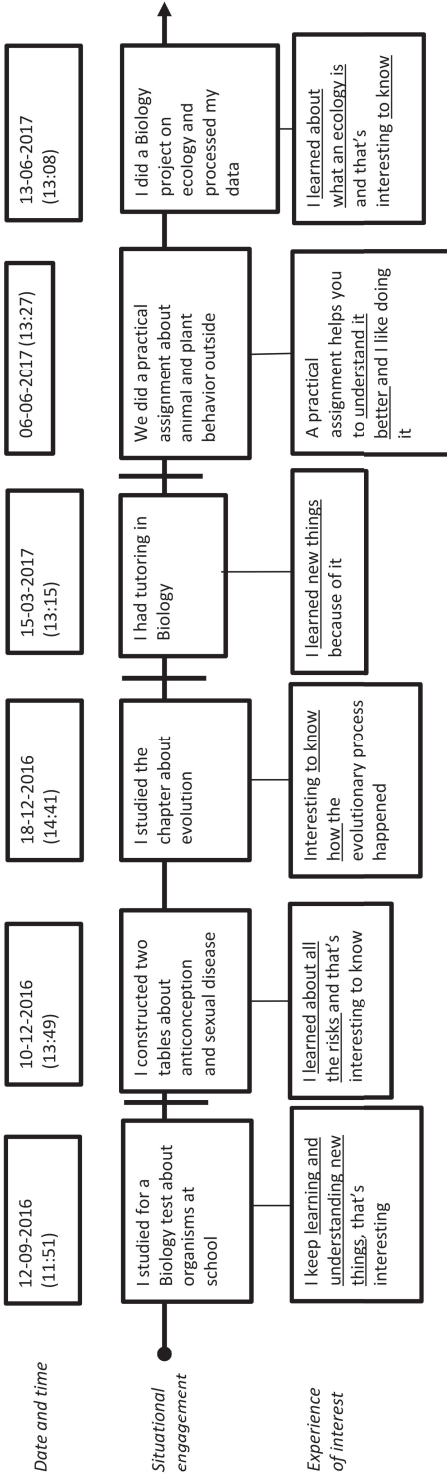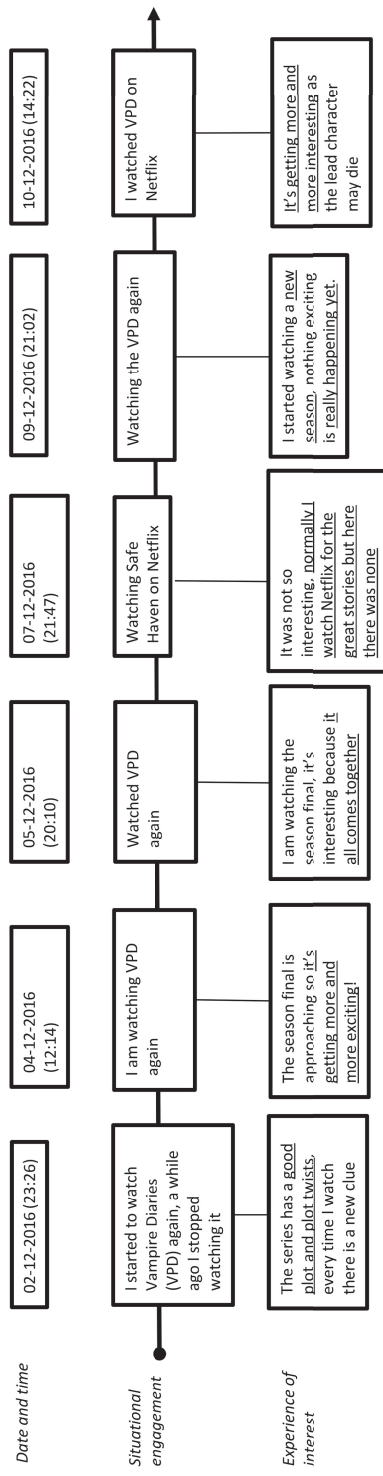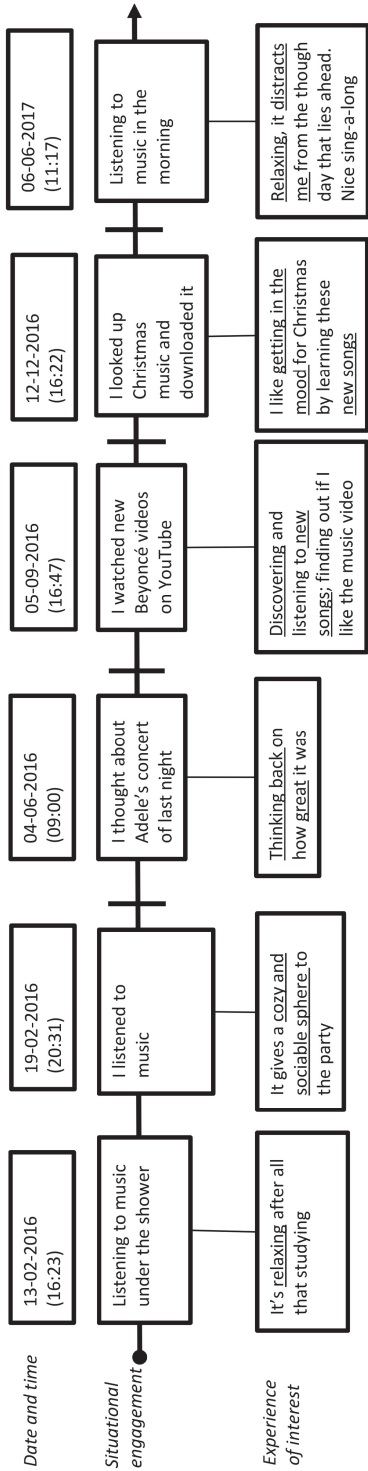*Figure 5.4.* Visualization of part of Nathans' moment-to-moment engagement in the sustained interest school, illustrating the mechanism of substantive participation. *Note.* The underlined text highlights how Nathan refers to something else in his participation each time he reports to experience interest.

Simultaneous involvement of sustainment mechanisms

Although we found six different sustainment mechanisms, objects of interest were often sustained through the simultaneous involvement of several of these mechanisms. Our findings presented thus far have shown how interest sustainment is not only associated with the goals and personal preferences an individual refers to in the moment, but also resides in object- and context-specific characteristics inherent to one's real-time, moment-to-moment engagement with an object *over time*. In this simultaneous involvement of sustainment mechanisms, we noticed that over time some mechanisms became more or less foregrounded in the experiences of interest. Moreover, we found indications that new sustainment mechanisms may develop over time. To illustrate how mechanisms might simultaneously be involved in interest sustainment, we have included a last example (Figure 5.5) of (part of) Kelly's interest in cooking. The first few times she engaged with cooking, Kelly was focused on learning new recipes and becoming better in cooking (mechanism of goal setting) but in subsequent events a positive state was also highlighted (e.g. 'It is fun to do', 'I like to spend time with Julia'; mechanism of engagement appreciation), suggesting both mechanisms may explain Kelly's sustainment in cooking. Half a year later she mentioned that cooking did not provide a challenge for her anymore, which might mean she did not get the feeling that she was still working towards the goal. Instead, we could see that cooking developed into a personal preference for the activity (e.g. 'I like to cook', 'I have always loved cooking'), and that she sustained in the interest because she identified herself with cooking at this point.

5

Date and time	07-06-2016 (19:23)	09-06-2016 (19:23)	13-06-2016 (18:36)	15-06-2016 (17:49)	07-09-2016 (17:59)	09-09-2016 (20:10)
Situational engagement	I made pancakes	I made Bobotie with my mum	Cooked together with my mum	Cooked with my mom	Made dinner for me and my parents	Made dinner with Julia, a couscous salad
Experience of interest	It's fun and I like trying out new recipes, then I will get better at it	Nice to do things together, I like learning from my mum	Nice to do things together and learning about the do's and don'ts of cooking	I like learning new things related to cooking	I like doing it, if things go wrong you learn from it. I'm getting better	I liked listening to her stories

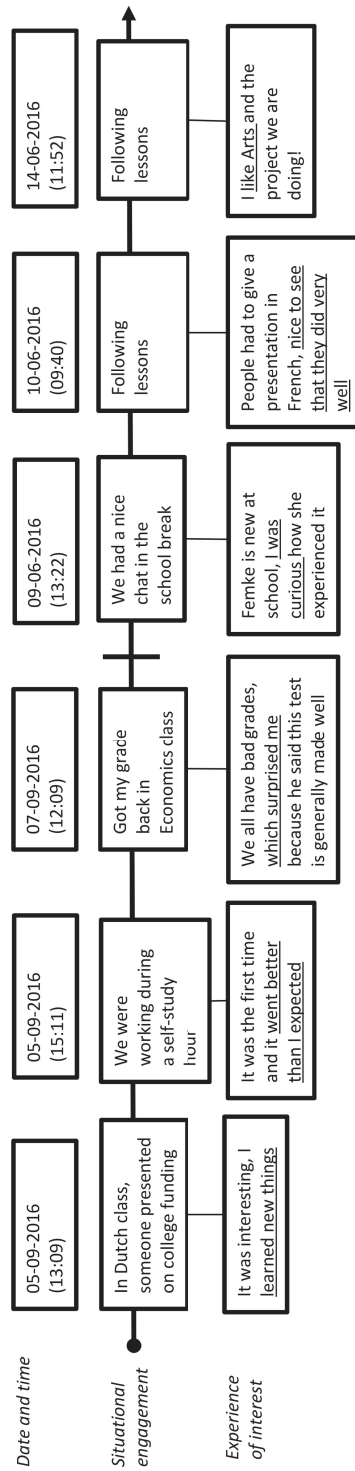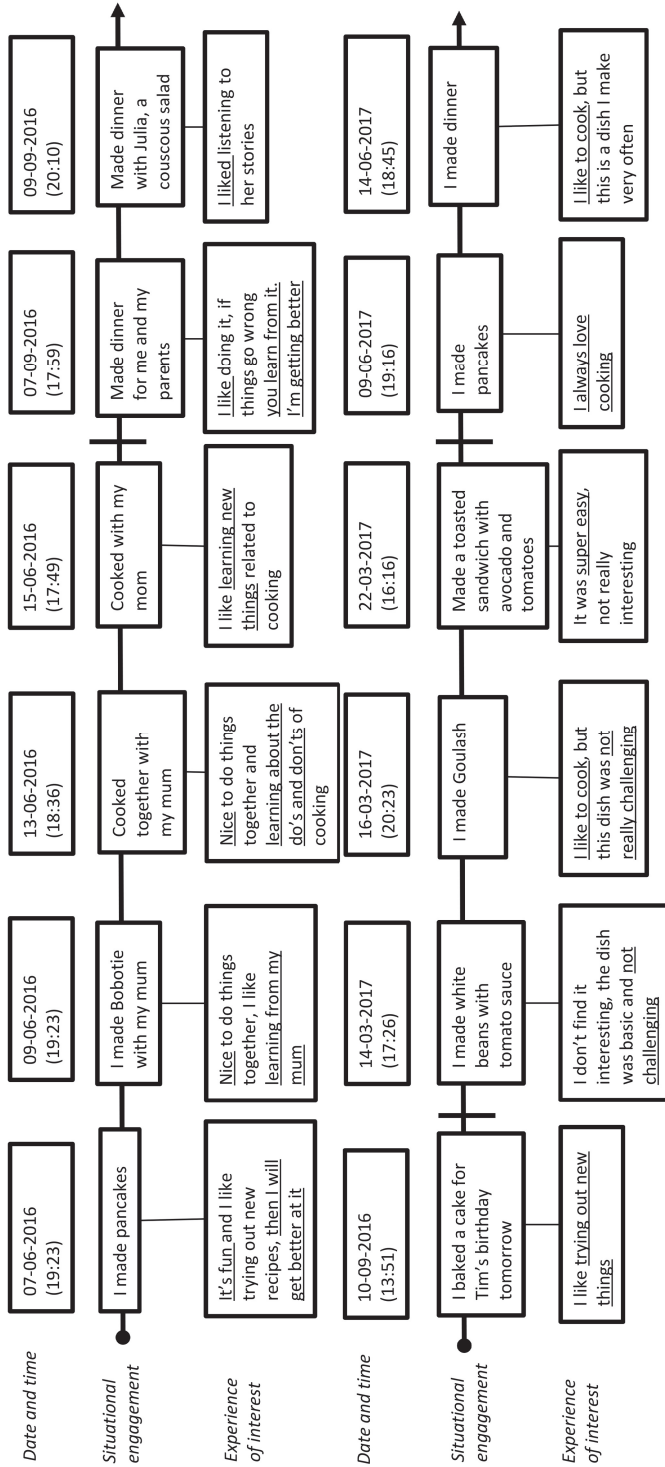| Date and time	10-09-2016 (13:51)	14-03-2017 (17:26)	16-03-2017 (20:23)	22-03-2017 (16:16)	09-06-2017 (19:16)	14-06-2017 (18:45)
Situational engagement	I baked a cake for Tim's birthday tomorrow	I made white beans with tomato sauce	I made Goulash	Made a toasted sandwich with avocado and tomatoes	I made pancakes	I made dinner
Experience of interest	I like trying out new things	I don't find it interesting, the dish was basic and not challenging	I like to cook, but this dish was not really challenging	It was super easy, not really interesting	I always love cooking	I like to cook, but this is a dish I make very often

Figure 5.5. Visualization of part of Kelly's moment-to-moment engagement in the sustained interest cooking, illustrating the simultaneity of mechanisms. *Note.* The underlined text highlights how Kelly's interest sustainment over time is associated with mechanisms of goal-setting, engagement appreciation as well as biographical identification.

DISCUSSION

The aim of the present study was to provide a detailed and differentiated account of the mechanisms involved in interest sustainment, beyond the active role of the individual in sustaining interest. Together, the sustainment mechanisms we found show that an individuals' goal setting as well as identification with an object are important for understanding interest sustainment, but that other processes become visible when taking into account the whole 'history' of one's moment-to-moment engagement with an object (Prenzel, 1992). Our finding that individuals may intrinsically steer interest sustainment over time in terms of goal setting or biographical identification is largely in line with previous interest development research (e.g. Hidi & Renninger, 2006). The importance of personal goals for sustaining interests has already been acknowledged by multiple scholars (Hofer, 2010; Krapp, 2002; Nolen, 2019; Prenzel, 1992), as well as the importance of individuals' preferences and identification with certain objects of interest (e.g. Renninger & Hidi, 2017; Prenzel, 1992). Adolescents may deliberately evaluate if they find their interests fitting with their image of self and if they see themselves sustaining this interest in the future (Azevedo, 2011; Barron, 2006; Hedges, 2018).

When object- or context-specific characteristics are foregrounded in one's momentary experiences of interest, sustainment may be less on an 'action level' (Akkerman & Bakker, 2019), characterized by conscious pursuit and active engagement, and instead revolve around certain *routine-* or *practice-based* engagements. First, individuals may sustain their interests over time because they value learning opportunities in specific practices (e.g. in a biology class, but also YouTube; Barron, 2006) to develop their knowledge or competence with regard to particular content. We found that this progression is not necessarily linked to a distant goal of becoming better in something, as individuals may value learning something new in the specific situation. Furthermore, individuals may sustain interest because they repeatedly appreciate their engagement, often in terms of positive feelings (i.e. relaxation, enjoyment, social sharing) that may be inherent to participating in their specific routines or practice-based activities (e.g. skateboarding, see Hollett & Hein, 2018). Moreover, adolescents may re-engage with particular content over time because the storylines in books and series tend to captivate them: the characteristics of the object, such as exciting plot twists, may direct adolescents to sustain their interest over time. Finally, a substantive participation

5

may play a role in sustainment. If adolescents have to spend a large amount of their time in a practice like school that provides manifold opportunities for experiencing interest, adolescents might find something different in each moment that may evoke interest (Sansone & Thoman, 2005). These processes that appear context- and object-dependent are mentioned in the literature, but mostly with regard to the *triggering* or emergence of interests (e.g. Hidi & Renninger, 2006; Bergin, 1999). Thus, our study can add to theory by showing that aspects that are solely attributed to understanding the emergence of interest (e.g. participating in a practice, positive emotions, storylines), may also be important for understanding interest sustainment.

As already suggested by socio-cultural and cultural-historical approaches, we may thus conclude that interests are not only sustained by deliberate intentions of the individual, but also by other object-specific and contextual processes that are associated with engaging in interests over time. Interests were often sustained through the simultaneous involvement of various mechanisms. Which mechanism may be foregrounded in a specific experience of interest may be dependent on the social and material opportunities for engagement in the situation at hand. For example, whether someone experiences a positive state while engaging with an object or reports to be captivated by a storyline, may be dependent on the presence of social others (Chesworth, 2018). Moreover, changes in the social or material opportunities for pursuing a specific object of interest may play a role in how the sustainment mechanisms develop or change over time. For example, if one's best friend quits playing volleyball, this may lead an individual to qualify his or her sustainment less in terms of volleyball as being fun. Also, parents play a vital role in how adolescents sustain their interests, for example through providing means to pursue a specific object of interest (Crowley, Barron, Knutson, & Martin, 2015; Neitzel, Alexander, & Johnson, 2019).

These moment-to-moment opportunities for engagement may also play a role in whether the more 'deliberate' mechanisms are foregrounded. For example, a goal can be temporarily less foregrounded when one is busy with studying for exams or suffering from an injury and might even disappear as a whole over time. This disappearance may be explained by the life-tasks of individuals, including the developmental tasks that arise during certain age periods. According to Hofer (2010), interests may decline over time or be abandoned all at once if the goals are achieved or if preferences are no longer

relevant for a person as he grows older and has to tackle other life-tasks (e.g. going to college). Hence, sustainment mechanisms should not be regarded as static entities (i.e. like an on/off button) but instead as dynamic processes that are strongly connected to one's prolonged, real-time engagement with an object of interest and an individual's interpretation (Akkerman & Bakker, 2019; Azevedo, 2011).

Implications for research and practice

Our findings imply that *predicting* interest development is difficult, since persistent engagement can change from moment-to-moment: what determines interest sustainment is dependent on the 'fullness of life' (see Hedges, 2018 and Hedges and Birbili, 2019), hence both the object- and context-specific characteristics of a situation and how an individual interprets this with regard to their history of engaging with that object or their imagined future. A similar argument has been made by Akkerman and Bakker (2019) who have argued that the development of interests is dependent on the situatedness of one's engagement with a specific object in everyday life. They indicate that interest development may be difficult to predict because of the nonlinearity and fluid nature of interests, referring to the possibility that interests develop and grow in different directions over time. We have empirically demonstrated this fluidity and nonlinearity, as various mechanisms simultaneously sustain interests and may become more or less foregrounded in the experiences of interest over time. For future research, this implies that studies should trace every object engagement from moment-to-moment across different contexts, if one aims to provide theoretical insight in how interests may develop over time (see Akkerman & Bakker, 2019). Moreover, this fluid and nonlinear nature of interest additionally implies that it is difficult for practitioners to predict whether and how adolescents' interests develop over time.

Limitations and future research

In the present study we asked adolescents how they experience interest in a particular object from moment-to-moment, to derive sustainment mechanisms. This can be considered a strength on one hand, as the measurement of these 'real-time' experiences of interest leads to a differentiated understanding of why adolescents sustain interest (see Akkerman & Bakker, 2019; Bergin, 2016; Hollett & Hein, 2018; Prenzel, 1992). On the other hand, the experience sampling method is very focused on how the individual may indicate to experience interest, fully relying on momentary self-reports. Observations

5

and follow-up interviews after reporting may be helpful for future research to study the processes underlying sustainment, especially to further study sustainment mechanisms that seem to be more associated with object and context characteristics.

Moreover, our definition of sustainment (i.e. "prolonged relations with an object of interest that involves repeated episodes of active engagement over time"; Prenzel, 1992) may have narrowed the scope of this study. Through having the strict requirement that interests should be sustained for at least a year, we may have excluded specific interests. For example, interests that may be engaged with over a large timespan, but only for a short period (e.g. snowboarding can only be done in winter time; Akkerman & Bakker, 2019), where not included. Perhaps these interests, with yet a different way of engaging (i.e. season-specific) might have revealed different sustainment mechanisms. Nonetheless, we would like to stress that we have included a large enough variety of interests in this study to provide a nuanced understanding of adolescents' interest sustainment. Not only did we study 'active leisure' interests like hockey or piano playing, also 'passive leisure' interests like watching TV were included, and non-leisure interests like 'school' as well as maintenance interests like 'eating' were included (Hofer, 2010). Future research could validate the identified mechanisms through tracing adolescents' interest sustainment over a larger (connected) time span than the two-week data collection periods in this study.

A final limitation might be the age group in which we studied the sustainment of interests. Young adolescents' lives are still highly dominated by school (Csikszentmihalyi & Hunter, 2003) and we found that this substantive participation in school could sustain interest. We are curious whether we will find this sustainment mechanism in higher age groups (e.g. after the transition to higher education). Hence, future research is needed in other age groups to find out if the sustainment mechanisms we identified remain similar, or additional or different mechanisms can be found.

In sum, our study contributes to interest research by giving a detailed and differentiated account of interest sustainment through examining adolescents' moment-to-moment engagement with an interest. Adolescents may deliberately sustain interests through referring to past or future images of themselves, but interests may also be simultaneously sustained by objects and contexts. This may imply that we should reconsider whether to use the term 'individual interest' to describe sustained interests, as more than the individual may sustain an interest.

APPENDIX 5.1.

Participants (*n* = 56), their number of sustained interests (including labels) as well as the number of interest events analyzed per interest and person

Name	Sustained interests (N)	Object labels	Interest events (N)
199	10	Reading the newspaper	31
		Talking	27
		Cycling	54
		Bouldering	27
		Breaks	14
		Watching Netflix	10
		Music	11
		Watching the news bulletin	5
		Snapchat	8
		P.E.	5
269	5	Watching tv	33
		Reading	22
		Volleyball	29
		Listening to music	10
225 (Laura)	5	Music*	29
		Working	35
		Dancing	49
		Netflix	18
		Make-up	13
227 (Lazlo)	6	Watching tv	33
		Listening to music	50
		Playing piano	22
		Gaming/games	22
		YouTube	15
		Hockey*	11
226	4	Playing the piano	67
		Socializing	50
		Trains	34
		Time travelling	12
195	6	Gaming	23
		Hockey	31
		Watching movies	11
		Running	6
		Fitness	8
		YouTube	10

Name	Sustained interests (N)	Object labels	Interest events (N)
260 (Bram)	5	Eating	28
		Watching tv	20
		Cycling	12
		Gaming*	18
		School	40
229 (Kelly)	4	Hockey	12
		Netflix	41
		School	47
		Cooking*	18
284	2	Watching Netflix	14
		Playing soccer	16
193	6	Watching YouTube	46
		Playing a game	49
		Watching tv/Netflix	28
		Reading	21
		Listening to music	11
		Talking to friends	64
242 (J)	6	YouTube	36
		School	112
		Gaming	99
		Anime	36
		Music	20
		Social media	15
246 (Nathaly)	6	Hockey	11
		Meeting friends	17
		School*	41
		Guitar playing	7
		Tennis	9
		Watching Netflix/series	8
275 (Zania)	1	Biology*	11
261	5	Listening to music	40
		P.E.	7
		Netball	31
			17
		Meeting friends	49
		YouTube	

Name	Sustained interests (N)	Object labels	Interest events (N)
201	10	Driving my scooter	29
		Watching Arrow/series	20
		WhatsApp	24
		Cycling	26
		Watching movies	10
		Music	53
		Instagram	18
		Shopping	4
		Volleyball	19
		YouTube	9
256	5	Dancing	20
		Guitar playing	10
		P.E.	6
		Chemistry	9
		Working at the McDonalds	19
207	5	P.E.	8
		Listening to music	34
		Netflix	35
		Tennis	35
		Watching tv	36
208	2	(Online) shopping	18
		Contact with people	56
279	4	Netflix/series/movies/tv	26
		School	30
		Work	20
		Friends/chilling with friends	32
258	8	Going into town	11
		Reading	13
		Dog	12
		Horse riding	19
		Drawing	10
		Watching tv	13
		Hiking	29
		YouTube	18
251	3	Athletics	40
		School	130
		Fitness/the gym	6
272	4	Family	38
		Friends	31
		iPad/phone	36
		Fencing	11

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Name	Sustained interests (N)	Object labels	Interest events (N)
262	5	Watching a movie	9
		Listening to music	8
		Shopping (online)	7
		Series/Gossip Girl	29
		YouTube	15
230	9	Meeting up	16
		Faith/church	23
		Cooking	25
		Hiking	13
		Break/gap hour	21
		social media/WhatsApp	26
		Out for dinner	16
		Soccer	24
		Singing	17
205	3	Meeting friends	8
		Hockey	31
		Babysitting	10
212	6	Party	8
		Gaming	27
		Earning money	13
		Music	19
		Sports	18
		Soccer	38
217	4	Chilling	9
		FIFA	36
		Hockey	22
		Soccer	27
187	10	Chilling	16
		(Making) dinner	23
		Cycling	18
		Gaming	15
		Studying	15
		Listening to music	21
		School	32
		Sports	9
		Work	17
		YouTube	15

Name	Sustained interests (N)	Object labels	Interest events (N)
198	8	Biology	22
		English	34
		Physics	19
		Dutch	14
		Chemistry	12
		Netball	23
		Watching soccer	21
		Math	23
200	2	(Watching) Soccer	58
		FIFA	43
239	5	Gaming	34
		News	26
		Studying	24
		School	101
		Social Media	23
214	8	Meeting family/friends	57
		Series/Netflix	34
		Fashion	18
		Hockey	16
		School	30
		Social Media	32
		Sports	8
		Going out	15
216	2	Reading	42
		Dancing	46
218	6	Bass	27
		Play the drums	20
		Gaming/CS:GO	15
		Hockey	9
		Making band music	16
		Tennis	8
222	3	German	8
		French	9
		Hockey	11
223	5	Playing guitar	8
		Netball	11
		Music	13
		Piano playing	19
		Playing a game	10

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Name	Sustained interests (N)	Object labels	Interest events (N)
236	10	Family	15
		Partying	5
		Cooking	16
		Babysitting	8
		Horse riding	6
		School	75
		Sailing	6
		Friends	60
		Leisure time	43
		Work	12
237	10	Friends/chilling	29
		Eating	10
		Party	4
		Listening to music	14
		Netflix	15
		Rugby	34
		School	85
		Watching tv	28
		Working	12
		YouTube	25
240	7	Meeting up	12
		Gaming	20
		Netball	72
		News reading	32
		Watching tv	35
		WhatsApping	29
		YouTube	68
243	14	Anime	11
		French	18
		Hair	6
		Instagram	6
		Jumbo	22
		Cooking	32
		K-pop	43
		Art	25
		Make-up	27
		Music	35
		Netflix	30
		Soccer	18
		Science	33
		YouTube	11

Name	Sustained interests (N)	Object labels	Interest events (N)
244	4	Gaming	46
		Watching tv	13
		Working	27
		YouTube	28
247	12	History	8
		Reading	8
		Global science	11
		Being with family	11
		Being with friends	17
		Music	11
		Babysitting	5
		School	19
		Watching tv	27
		Shopping	9
		YouTube	22
		Drawing	21
246	9	Hockey	34
		Walking the dog	44
		Getting food at Jumbo	6
		Cooking/baking	11
		Listening to music	39
		Babysitting	10
		Provide (hockey) training	6
		Watching tv	38
		YouTube	28
249	4	Watching movies	43
		Gaming	22
		Watching tv	68
		Swimming	72
202	5	P.E.	6
		Playing hockey	20
		Listening to music	21
		social media	24
		(Watching) soccer	5
203	8	Meeting up	12
		Chatting on the phone	10
		P.E.	7
		Instagram	27
		Listening to music	34
		Break	43
		Watching Pranks	19
		Watching tv	15

Name	Sustained interests (N)	Object labels	Interest events (N)
206	7	Watching movies	7
		Handball	30
		Cooking	15
		Reading	25
		Listening to music	41
		Netflix (series)	34
		Playing the piano	39
211	6	Acting	6
		Dancing	8
		Hockey	16
		Student Council	6
		Listening to radio	10
		Watching (Netflix) series	8
213	7	Hockey	45
		Cooking	17
		Reading	48
		Playing saxophone	49
		Shopping	16
		YouTube	27
		Watching series (on Netflix)	29
250	5	Cooking	12
		School	97
		Watching tv	11
		Working at the Vomar	29
		YouTube	83
253	5	Parties	9
		Hockey	22
		Class	14
		Netflix	18
		Break	8
264	9	Cycling	16
		Chatting	19
		Make-up	13
		Music	18
		Visiting others	9
		School	18
		Social media	9
		Watching tv	15
		Watching YouTube/Netflix	46
266	2	Sports	28
		Food (and subcategories)	24

Name	Sustained interests (N)	Object labels	Interest events (N)
270	4	Gaming	171
		9Gag	116
		Watching tv	21
		YouTube	78
276	13	Geography	7
		Do It Yourself	7
		English	6
		Math	7
		Cycling	12
		French	7
		History	12
		P.E.	9
		Reading	33
		Walking the dog	8
		Writing	9
		Drawing	17
		Watching tv	66
277	5	Dancing (and subcategories)	61
		P.E.	7
		Physics	10
		Watching tv	17
		Birthday	8
56	334		8281

Note.[*]Sustained interests that are drawn upon in the manuscript.

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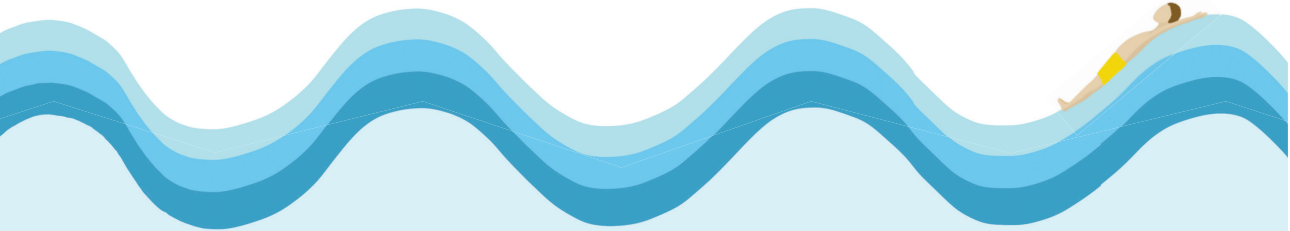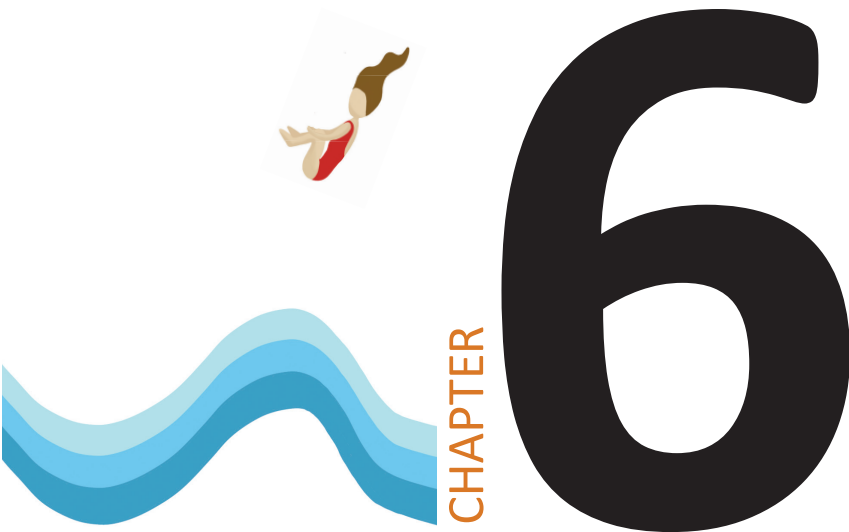
Summary of results and discussion

"[interests are] active ... dynamic ... personal" (Dewey, 1913, p. 21).

This thesis set out to provide a detailed characterization of adolescents' multiple interests in and out of school, studying what interests adolescents have as well as how these interests appear across contexts. Additionally, our aim was to characterize the interest-based dynamics that are involved with experiencing interests in daily life, in order to understand why individuals sustain their interests over time. In order to do this, a smartphone-based, personalized experience sampling method (an application called 'inTin') was applied that allows to monitor interest-driven experiences in adolescents' daily lives in an open-ended, momentary and systematic fashion.

In this chapter, we will first summarize the main findings of each study described in chapters 2-5, followed by a discussion wherein the findings of the different studies are synthesized. We conclude this chapter by discussing limitations of the thesis, suggestions for further research and implications for educational practice.

SUMMARY OF RESULTS

Chapter 2: multiplicity of adolescents' vocational interests

In chapter 2, our aim was to account for the multiplicity of adolescents' vocational interest structure, by unravelling the distinct combinations of vocational interests that secondary school students have. This is important, as students in the Netherlands already make future-oriented choices at the end of grade 9, a process that might be challenging when students have similar levels of interest in all vocational domains (i.e. showing nondifferentiation in their interest structure).

In a cohort study (n = 358), we administered a vocational interest questionnaire based on Hollands' (1997) circumplex theory of vocational interest, that describes how individuals are thought to have six possible types of vocational interests posited on a circumplex model: realistic, investigative, artistic, social, enterprising, or conventional (R-I-A-S-E-C). The six types are considered to represent "stable/trait-like individual characteristics that influence behavior through preferences for particular vocational or occupational activities" (Van Iddekinge, Puta, & Campbell, 2011, p. 14). A Latent Profile Analysis was used to analyze the RIASEC interest patterns that might exist across individuals, which revealed that a large proportion (40.8%) of secondary school students showed uniform levels of interest (i.e. low, moderate or high) in *all* vocational activities. See also Figure

2.1 for the means across the identified profiles. Others (59.2%) had a more pronounced interest in for example enterprising and conventional, or realistic and investigative vocational activities, with low interest in the other interest domains. Two out of three boys showed uniform levels of interest in all RIASEC domains, whereas only one in four girls did so. Students who were classified as having a *differentiated* interest profile were more likely to choose a specific educational track, in line with their dominant vocational interest(s), than students with a *nondifferentiated* interest structure. Especially the students with neutral interest in all vocational domains were more divergent in their educational track choice as well as undecisive about their future careers. However, having a nondifferentiated interest structure did not necessarily mean that students were unclear about their future career, as students with low and broad vocational interests were often able to express career aspirations in a more general (e.g. I want to work with animals) or specific manner (e.g. I want to be a veterinarian).

We concluded that the extent to which students show multiplicity in their vocational interests differs across individuals, in that some students endorsed high interest in particular vocational domains at age 14-15, whereas other students reported similar levels of interest in multiple domains. Multiplicity in interest structure at this age might indicate that these students' interests will differentiate at a later stage of development, after they have had more time for exploring possible vocational/ occupational environments (Hirschi, 2009). Another explanation that we deem plausible is that vocational interest assessments based on RIASEC theory do not fully capture the complexity of students' interest structure. Students might experience *other* or more specific interests related to their future, for example in post-modern vocational activities or the leisure domain. It is plausible that students' ideas about their future might continually change according to what they experience in daily life and how these relate to their idea of self, also outside academics, which we set out to explore in the subsequent chapter.

Chapter 3: multiplicity of adolescents' life-wide interests
Chapter 3 examines adolescents' multiple interests in and out of school (i.e., *life-wide* interests) by means of a smartphone-based, personalized experience sampling method (ESM) in a selection of the cohort studied in the previous chapter. Forty-two Dutch adolescents aged 13–15 years, provided 2 weeks of ESM data on their engagement in

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objects of interest throughout their daily lives. Our aim was to provide a comprehensive view on the types of interests that adolescents experience both in and out of school, as much of the existing research has focused on either (lack of) school interests or out-of-school interests. In particular, we examined the extent to which these interests were continuous across their family and in- and out of school peer contexts.

In total, adolescents reported 671 unique interests in a period of two consecutive weeks [ranging from 8 - 30 interests per person]. The adolescents appeared to experience interest in a wide variety of domains (see Figure 3.1 for an overview). The domains most frequently reported were media (i.e. 27.4%, for example watching tv/film, listening to music, social media, online gaming), leisure (i.e., 21.2%, for example structured hobbies or sports like playing the piano and hockey), and also school interests (24.9% of all interests). Interestingly, activities like eating and watching television were also reported as interests, showing how ordinary aspects of daily life can also be experienced as interesting. Together, these findings provide a detailed representation of adolescents' everyday experience of interest.

With regard to interest experiences in and/or across contexts in daily life, our results showed that interests are to some extent experienced across social contexts, suggesting that adolescents show some continuity in the interest topics and activities they participate in (Barron, 2010). Although most interests were situated in one context, i.e. being bound to particular materials or resources of a specific context (e.g. doing make-up each morning, showering, eating dinner), one in four reported interests was continuous across contexts. Thus, these interests were experienced across the family, school and out-of-school peers contexts. This across-context continuity became apparent in three different ways. More than half of the interests that were experienced across contexts were shared within these different contexts over time, applying mostly to media interests (e.g. watching TV, gaming). Secondly, over a third of the interests were continuous across contexts through multimembership of an actor involved (e.g. a sports teammate who is also a classmate). This mostly applied to school and leisure interests. The remaining interests were shared across contexts within a situation, meaning that actors from different contexts were involved simultaneously and thus these were mostly socializing interests. Interests that were continuous across contexts were most often found to be shared with school peers and out-of-school peers, hence

these contexts appeared to 'feed' interests simultaneously. In the following chapter, we examined this contextualized nature of interest further, by focusing on the ways that school is reflected in adolescents' interest experiences both in and out of school.

Chapter 4: the role of school in interest in daily life

Chapter 4 builds on prior work suggesting that school is typically *not* seen as interesting by adolescents, nor as a context for triggering and supporting interest experience (e.g., Larson & Verma, 1999). In this chapter, by centralizing adolescents' self-reported interest experiences and examining how these reflect adolescents' idiosyncratic ways of relating their interests to school, it became possible to reveal nuance in the role of school in interest. Prior research from an ecological perspective has indicated that interests have the potential to extend initial time and place and may thus be experienced across contexts (e.g. Barron, 2006; 2010), which for example has been shown for schoolwork at home (Hedegaard, 2012; 2014).

By thematically analyzing the 7239 interest experiences that were reported by 44 adolescents across four data collection waves [ranging between 63 and 307 interest events per participant], we identified three ways in which adolescents refer to school in their interest experiences in daily life. First of all, most adolescents (*n* = 37) reported interest in the school curricular and co-curricular content, yet showed selectivity in what content they were interested in and how specific the represented content was (e.g. reporting interest in the broad domain of Science, Technology, Engineering and Mathematics [STEM], chemistry or specifically electrons). Also, while adolescents sometimes selected the same objects of interest (e.g. chemistry), what they experienced as interesting was always idiosyncratic to the person. Also, adolescents with an interest in chemistry did not experience each chemistry class as interesting. Second, adolescents reported interest *at* school, referring to engage in interests not related to the (co-) curriculum as a way to enrich their time in school. Hence, school was reflected as a broader participation beyond the curriculum (i.e. school as a context for interest). While being in school, adolescents (*n* = 29) sometimes reported interest in socializing or other aspects related to participation in school, even showing to be actively orienting to social or leisure interests instead of the curricular or co-curricular content being offered. For example, one could be drawing during class because "class was boring and it was fun to draw instead". And finally, adolescents (*n* = 21) sometimes reported interest *after*

6

school, where they referred to the need to recharge from and for school by engaging in social and leisure interests (i.e. reflecting school as a demanding practice in daily life).

We found that of the 44 adolescents participating in this study, four out of five referred to school in their interest activities in multiple ways, i.e. by reporting interest *in* school, *at* school and/or *after* school. Moreover, a quarter of all adolescents referred to school in all three ways, indicating school played a multifaceted role in their interest experience in daily life. Finally, for one adolescent, school did not seem to play a role in her interest activities in daily life at all.

Summarizing, the findings demonstrated that adolescents relate to school in their interest experiences in multiple and idiosyncratic ways. Adolescents tend to orient in their interest experiences towards specific content both in and out of school, where interests can emerge *through* participating in school, but school can also play a role in triggering and supporting interests that are engaged in outside of school (i.e. leisure interests, such as gaming). These findings show that school is a multifaceted practice that extends the curriculum, building and even practice and as such. Our final chapter further examined how school, as well as other objects or contexts, can play a role in interest sustainment.

Chapter 5: mechanisms for interest sustainment

In a last study, reported in chapter 5, we examined adolescents' *sustained* interests, aiming to gain a detailed and differentiated understanding of the mechanisms involved in interest sustainment by tracing these mechanisms in adolescents' moment-to-moment qualifications of their prolonged objects engagements. Whereas previous research has often attributed interest sustainment to deliberate reasons of the individual, empirical findings (Draijer et al., 2020; Akkerman et al., 2019) and previous chapters of this thesis indicated that processes related to the daily routines and practices might also play a role in sustainment.

By thematically analyzing all chronological references across 8281 reported interest experiences of 334 sustained interests of all 56 adolescents that completed six data collection waves, we identified six sustainment mechanisms. References could refer to past or future, anticipated experiences with the prolonged object, or present

conditions (i.e. the here-and-now). Individuals intrinsically steered interest sustainment over time in terms of goal setting (e.g. I want to become a better piano player) or biographical identification (e.g. I have always liked playing the piano), hence referring to past or future images of themselves as a qualification for sustainment (Hofer, 2010; Krapp, 2002). When object- or context specific characteristics were foregrounded in their interest experiences, we found that sustainment was less characterized by conscious pursuit of goals or identity, revolving around certain routine or practice-based activities. Interests were sustained because individuals continuously valued the learning opportunities in specific practices (e.g. in a biology class), repeatedly appreciated their engagement in a particular object, gaining positive feelings from it (e.g. chatting to friends), or because they were captivated by the storylines in books and series (e.g. exciting plot twists). Finally, we found how the adolescents' interests could be sustained because they participate in a mandatory practice like school, that provides manifold opportunities for experiencing interest. See Figures 5.1 through 5.4 for illustrative examples of the sustainment mechanisms not revolving around active individual 'steering' of the engagement.

Interests were often sustained through various mechanisms. Which of the six mechanisms was foregrounded in one's experience of interest, differed over time, and new sustainment mechanisms could also develop (e.g. when a goal is attained). What mechanism is foregrounded may depend on the changes in social and material opportunities for engagement: for example, if one's best friend quits playing volleyball, an individual might qualify his or her sustainment less in terms of volleyball being fun. Hence, sustainment mechanisms are dynamic processes that are strongly connected to one's prolonged, real-time engagement with an object of interest (see also Akkerman & Bakker, 2019; Azevedo, 2011). After characterizing these dynamics, we may put forward the question if 'individual interest' as the concept typically used in the literature for sustained interests sufficiently captures this continuous interaction between persons, objects and contexts in daily life (Akkerman & Bakker, 2019). Draijer and colleagues (2020) have already shown how different interests constitute different *multidimensional* structures, in that interests are experienced in multiple ways (e.g. with high or low personal value, flow or agency).

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DISCUSSION

Multiplicity in life-wide and life-long interests

This thesis has demonstrated how multiplicity in adolescents' interest is a common phenomenon, in terms of what they report as interests in relation to their future as well as in everyday life (chapter 2 and 3). Our research extends prior work that provided first indications that adolescents engage in different parallel interests that may all be weighed in relation to study and career choices (Akkerman & Bakker, 2019; Azevedo, 2011; 2013; 2018; Barron, 2006; 2010; Bergin, 2016; Hofer, 2010).

Previous research often described adolescents to be typically disengaged from or disinterested in school (e.g. Hidi & Harackiewicz, 2000). This thesis, however, has provided a more nuanced view by demonstrating that most adolescents do experience interest in specific (co)curricular contents offered by school (chapter 3 and 4), and that adolescents can experience connections with their out-of-school interests through their participation in school (chapter 4). Interest assessments typically measure averaged interest levels in predefined school-related objects like mathematics (Ufer et al., 2017), often with the result of finding a negative developmental trend. This thesis, however, has indicated that illuminating intraindividual processes helps to show the more subtle and qualitative differences in interest experiences within and across persons (Krapp, 2002).

This thesis also shed light on the types of interests that adolescents have in daily life (chapter 3), in addition to the more well-described sources of interest like leisure or media interests that appeared in the literature (e.g. Kleiber et al., 2014). We found how ordinary aspects of daily life, like eating, sleeping, or watching television, could also trigger interest experience for some adolescents, instead of being a mere 'routine' activity (Larson & Verma, 1999). See also Figure 3.1 as well as Appendix 3.1 for an overview of the interest categories that we found. These adolescents expressed interest in these seemingly ordinary activities, which essentially meant that they liked to spend time on or would like to spend more time on these activities (Neitzel, Alexander, & Johnson, 2008). They not only reported to experience positive feelings, but also expressed how they cognitively engaged in the content associated with these activities (e.g. thinking about how to enjoy a good night's sleep, or preparing a good dinner), that

may be inherent to participating in such activities (see also Hollett and Hein, 2018, who report on the interest in skateboarding).

Finally, this thesis has demonstrated that adolescents engage in their multiple objects of interests in idiosyncratic ways (chapter 4), visible not only in how they label their interest in more specific or more general ways (e.g. 'electrons' or 'chemistry') but also in how they experience different situations of engaging with an object (e.g. a chemistry class could be boring despite an overall interest in the topic), and in what mechanisms are involved in their interest sustainment over time (chapter 5). Our findings can be linked to contemporary developmental theories of interest (e.g. Krapp, 2002, Hofer, 2010), that posit that adolescents over time exhibit more specific interests as they are developing a sense of self and may evaluate each situation in terms of their personal 'criteria of interestingness' (Hofer, 2010).

Continuity across peers, family and school contexts

This thesis has shown that individuals' multiple interest-related participations in daily life can be connected (chapter 3 and 4). We found that adolescents engage in particular content both in and across contexts, and sometimes experience similar objects as interesting across contexts, such as reading, hockey, or playing the piano. This confirms that adolescents are agents who can recognize and use opportunities for connecting their multiple worlds (Phelan et al., 1991; Barron, 2006).

Hedegaards' concept of 'motives' (2012) may help in understanding the extent to which adolescents may orient themselves towards specific objects across contexts (i.e. understanding across-context continuity). What is meaningful and important to someone across situations may direct a person's choice of activities. For example, adolescents who are engaged in gaming after finishing school may do so to clear their heads. An activity may also be motivating when it connects to existing interests, as is the case when an individual experiences interest in playing hockey during a P.E. class.

Overall, our thesis has added to the understanding of the situated nature of interests by showing that continuity may depend on the type of object engagement (chapter 3). In line with work by Barron, we have demonstrated that media interests most easily tend to transgress initial contexts or spaces, as material and relational resources are

6

likely to be available across different contexts (Barron, 2006; 2010). Figure 3.5a depicts an example of how media interests can be engaged in across contexts. Other interests were more likely to be strongly embedded in a specific context, for example watching the news at home or playing hockey with the hockey team. This reaffirms how the social participation in a particular routine or practice-based activity and its related resources and materials can provide meaning and direction to experiencing interest (Azevedo, 2011; 2013; Akkerman & Bakker, 2019).

Dynamics in interest experiences and sustainment in daily life

This thesis was the first to examine individuals' situational, *real-time* engagement with their interests in daily life on a larger scale (chapter 3-5). First and foremost, our extensive analysis of daily interest experiences has shown how experience of interest with a particular object may change from moment-to-moment, as each situation is different in terms of the opportunities it provides and how an individual interprets it (chapter 4 and 5). More specifically, situations are different in terms of its object- and context-specific characteristics, and individuals may interpret their history of engaging with that object or their imagined future differently. Hedges (2018) has recently described these complexities underlying interest experience and sustainment as the 'fullness of life': "..children's lived experiences in their families and communities are what primarily drive their interests and learning" (p. 7).

As a consequence, interest development may be hard to predict, as it constitutes a fluid and nonlinear process, something that was already posited by Akkerman and Bakker (2019) and Azevedo (2018). However, by monitoring interest-driven experiences real-time in a moment-to-moment manner over longer periods of time, this thesis has provided insights into the *patterns of interest-based dynamics* between persons and their situated object engagements over time. In Chapter 4, we have identified three patterns showing how adolescents tend to make sense of school in relation to their interest experiences in daily life (i.e. interest in school curricular and co-curricular content, interest in social and leisure activities at school, in order to enrich time in school, and interest in social and leisure activities after school, to recharge from and for school). See Table 4.2 on page 102-103. We can also link this to discussions about what schooling is and what it should be (e.g. Biesta, 2010; Roth, 2015). If adolescents tend to relate to school in interest in ways that go beyond following a set curriculum,

this indicates that school is more than a learning institute, and that both researchers and educational practice should think of school as an institute where socialization and subjectification are central, with the individual adolescent and his or her interests and talents as the focus of education (Biesta, 2010).

In Chapter 5, despite the fluidity across experiences of interest, we were able to identify six mechanisms sustaining interest (i.e. mechanisms of goal setting, biographical identification, progress valuation, chronotopical captivation, engagement appreciation, and substantive participation). In line with Zittoun (2014), we might argue that *temporality* plays a vital role here; individuals' interest experiences cannot be regarded as independent units of analysis, but only become meaningful when examined as a *chain* of events: what happens in an event at a particular moment in time, and how an individual interprets this might particularly inform a person's experience of interest in the next event. Examples of such 'chains of events' are depicted in Figures 5.1 - 5.5. Similarly, Azevedo (2018) posited that "the whole of one's experience takes on meaning" (p. 109), in that only by regarding one's entire historical participation with an object of interest, it becomes possible to distinguish developmental patterns and changes in these patterns. In short, this thesis (chapter 4 and 5) provided insights into the interest-based dynamics that occur over time between persons, objects and their real-life contexts, like school.

Limitations and future research

This thesis was the first to examine interest in daily life on a larger scale using ESM data, granting us with a fine-grained understanding of how individuals experience interest in daily life. The methodological limitations that can be distinguished also provide directions for future research using ESM data.

A first limitation regards the labelling of interests and how they might change over time. As participants were asked to self-define their interests for each data collection wave, we were regularly confronted with changes in labelling. This could constitute rather trivial changes from 'soccer' to 'playing soccer', but could also represent a differentiation from the initial content, i.e. from 'hockey' to 'refereeing (in hockey)'. Especially for the study described in Chapter 5, we had to decide on similarities between interests as our aim was to investigate sustained interests. For example, one of the

participants reported an interest in *Netflix* that after a few data collection waves changed to *Pretty Little Liars*, which might be a specification of her interest in Netflix. We decided to regard these two as the same sustained interest, based on similarities in reported experiences of interest (i.e. she was also watching Pretty Little Liars in the data collection waves prior to her change in labelling). New, rapidly developing techniques such as *text mining* might help future research in analyzing such similarities or differences between interests in a more systematic and efficient manner, which is especially beneficial for large scale studies (e.g. with more participants, more interests and thus more momentary experiences to analyze).

A second limitation is that we sampled interest experiences in daily life, gathering data during two-week-periods every three months. Although this has given us a detailed understanding of the interests adolescents experience in daily life, we might have excluded certain interests that are season- or holiday-specific. For example, skiing is a season-specific interest that individuals spend time on during their Winter holidays. If this week is not part of the data collection waves, the consequence is that we miss out on this interest. Another example is carnival, which is a national celebration in February, or summer camp, which only happens during a set week in summer. Hence, gathering data with a certain temporal structure (i.e. every three months) may have consequences for what interests are revealed. Future research might be focused on ways to also grasp these interests, for example by interviewing adolescents several times during data collection to validate whether other interests appeared in the weeks after ESM data collection.

Interview methods, or other additional data from the perspective of the individual, might also be beneficial for exploring empirical questions on similarities across interests of individuals. For example, a question that might be interesting for future research is how different individuals provide meaning and direction to interests that were reported by many, for example YouTube. Whereas this thesis has provided insight into the idiosyncratic nature of interest, especially in relation to school (Chapter 4) and across situations (Chapter 5), future studies need to further investigate how opportunity structures in daily life can also provide meaning and direction for interest experiences across individuals (Azevedo, 2018; Akkerman & Bakker, 2019).

Practical implications

We discuss two main practical implications of this thesis. The first concerns the mandatory choice for an educational track in the Dutch secondary school system at the age of 15. Our finding that almost half of the students has similar levels of interest in all vocational/occupational domains puts forward the question if more degrees of freedom should be provided, in order for these students to be able to combine their multiple interests. For example, the system could provide students with the opportunity to combine school subjects from different tracks in the case they have multiple interests they want to pursue (e.g. choosing an extra language within a science track). But they should also be able to choose for a specific track in the case they would like to develop an interest in a particular domain, perhaps because they already know what they want to study after secondary school (e.g. advanced math). Enhancing the flexibility of the system can be linked to what some higher education institutes, such as Utrecht University, have already implemented. In order to comply to students' talents and ambitions, Utrecht University offers the possibility for students to tailor their own educational program, by providing opportunities to follow additional courses, even from other Faculties, next to a compulsory core curriculum. In doing this, students with specific interests as well as students with multiple interests get the opportunity to develop their sense of self further.

A second practical implication concerns the discourse around adolescents being 'academically unmotivated' (Hidi & Harackiewicz, 2000) or 'disengaged' from formal ways of schooling (Shernoff & Csikszentmihaly, 2009). In this thesis, we have shown (Chapter 2 and 4) that most adolescents are to some extent interested in school. However, some adolescents were not interested in school at all or reported neutral or low interest in all vocational or occupational directions. Educational practice might thus want to find ways to identify the adolescents who perceive school as mandatory, experience difficulty in thinking about their future, or who show no interest in learning at school at all. These adolescents might experience discontinuity between the world of school and out-of-school in terms of interest development and learning (Bronkhorst & Akkerman, 2016; Phelan et al., 1991). In seeking to connect to adolescents' wider lives, teachers may want to prioritize to re-establish continuity for these students, as they are the ones that risk disengagement from education. Recent evidence shows how teachers could increase students' interest by personalizing education, for example

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by customizing the learning content and tasks to the individual learner (e.g. context personalization, Reber, Canning & Harackiewicz, 2018).

In conclusion, understanding what adolescents experience as interesting as they move throughout their everyday lives is deemed crucial both for theory and practice, but has received little attention in prior interest research. This thesis adds to interest theory by providing insight into the complex dynamics between persons and their multiple interests and contexts associated with interest development, and by providing indications for practice on how to guide adolescents in their development of self.

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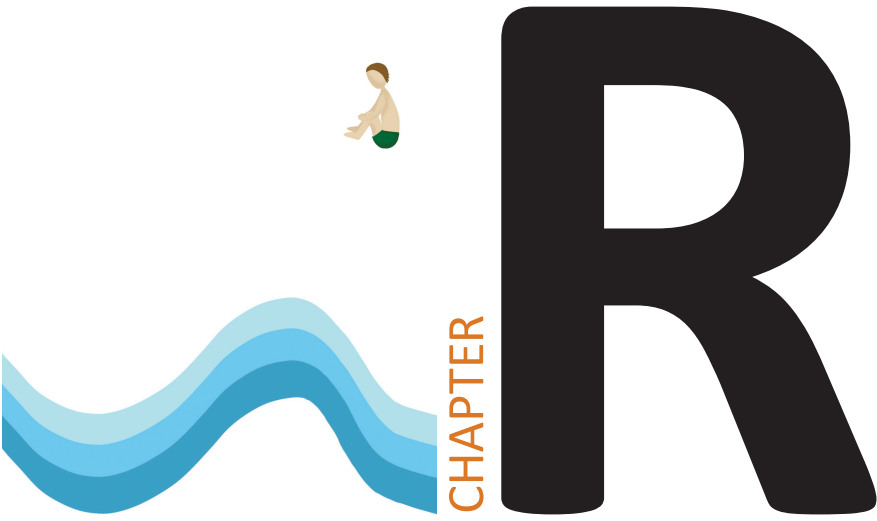
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NEDERLANDSE SAMENVATTING (SUMMARY IN DUTCH)

Interesse wordt vaak gezien als een belangrijke drijfveer voor leren en de ontwikkeling van adolescenten en als een belangrijke factor in hun proces van studie- en carrièrekeuze (Krapp, 2002; Renninger & Hidi, 2017). Tegelijkertijd beschrijft cognitief-psychologisch onderzoek dat de interesse van adolescenten in de schoolse inhoud over de jaren afneemt (bijv. Potvin & Hasni, 2014), wat gepaard kan gaan met gebrek aan betrokkenheid bij het leren op school en afnemende schoolprestaties van adolescenten (Hidi & Harackiewicz, 2000). Dergelijk onderzoek is echter vaak gefocust op specifieke interesses in specifieke contexten (bijv. wiskunde op school), en beschrijft de 'gemiddelde' interesse-ontwikkeling van adolescenten (Krapp, 2002; Ufer, Rach & Kosiol, 2017). Dat, terwijl er vanuit onderzoek met een sociaal-cultureel, ecologisch perspectief steeds meer belang wordt gehecht aan de eigenheid van interesse van individuen en de inbedding ervan in het dagelijks leven (Akkerman & Bakker, 2019; Azevedo, 2011; 2013; Barron, 2006; Nolen, 2019).

Onderzoek vanuit ecologisch perspectief heeft laten zien dat adolescenten tegelijkertijd *meerdere* interesses kunnen hebben in zowel binnen- als buitenschoolse contexten (bijv. Akkerman & Bakker, 2019). Er ontbreekt echter een grootschalig, systematisch onderzoek naar de interesses van adolescenten binnen en buiten school en hun interesses gedurende langere tijd. Dit proefschrift brengt de meervoudige interesses en dagelijkse interesse-ervaringen van adolescenten in kaart door middel van een *Experience Sampling Method* geïmplementeerd op een smartphone. In deze samenvatting worden eerst de theoretische achtergrond en de ontwikkeling van het instrument geschetst die centraal hebben gestaan in het onderzoek, waarna vier deelstudies, bevindingen en implicaties worden beschreven.

Theoretisch kader

Interesse wordt historisch gezien vaak gedefinieerd als de betrokkenheid van een persoon bij een bepaalde inhoud (bijv. een onderwerp, activiteit, artefact, gebeurtenis, abstract idee), waarbij er zowel sprake is van positieve gevoelens ten aanzien van die inhoud, als een bepaalde mate van cognitieve betrokkenheid (bijv. concentratie, focus; Hidi & Renninger, 2006). Interesses kunnen worden getriggerd in een bepaalde situatie, op een bepaald moment, en deze zogeheten 'situationele interesses' kunnen eenmalig

zijn of zich ontwikkelen tot 'persoonlijke interesses': een predispositie van een persoon voor een bepaalde inhoud. Of dit gebeurt, hangt er onder andere vanaf of een persoon waarde en positieve emoties toekent aan de interesse (bijv. ik hou van piano spelen en ik vind het belangrijk er beter in te worden).

Veel recent verschenen ecologisch en sociaal-cultureel onderzoek zet vraagtekens bij het onderscheid in interesses die ofwel door omgeving, ofwel door de persoon worden gestuurd, aangezien interesse inherent deel uit lijkt te maken van het dagelijks leven. De ontwikkeling van een interesse is daarmee van complexere participatieve aard (Akkerman & Bakker, 2019; Azevedo, 2011; 2013; 2018; Bergin, 2016; Hofer, 2010). De meeste studies die empirisch of conceptueel hebben laten zien hoe interesse deel is van het dagelijks leven, waren kleinschalig van aard. Dit proefschrift beschrijft dan ook grootschalig onderzoek, dat erop gericht is de interesses en interesse-ervaringen van adolescenten te karakteriseren als deel van het dagelijks leven. Het doel is om een gedetailleerd en relatief compleet beeld te krijgen van de interesses die adolescenten hebben, zowel in het dagelijks leven als wat betreft hun toekomst, en van de manier waarop deze interesses worden ervaren in relatie tot de school alsook in de loop van de tijd. Het krijgen van een dergelijk, holistisch beeld is van belang omdat dit de dynamische aard van interesse-ontwikkeling laat zien en aanknopingspunten kan bieden voor de begeleiding van adolescenten in hun leren en ontwikkeling.

Meten van interesses in het dagelijks leven
Om zicht te krijgen op interesses van adolescenten en hoe deze worden ervaren in het dagelijks leven, hebben we in een deelproject dat is beschreven in de hoofdstukken 3-5 van dit proefschrift, een methode toegepast die het mogelijk maakt om interesse op een *open* en *systematische* manier in kaart te brengen. Dit betekent dat adolescenten zelf hun interesses kunnen definiëren en dat hun interesse-ervaringen van moment tot moment, gedurende langere periodes kunnen worden gemonitord. Deze methode draagt de naam *Experience Sampling Method* (ESM) en is in dit project geïmplementeerd in een mobiele applicatie (inTin), zodat adolescenten op laagdrempelige wijze hun interesse-ervaringen konden rapporteren.

We hebben de interesse-ervaringen van 94 havo- en vwo-leerlingen van vier verschillende scholen in Nederland langdurig (van februari 2016 tot juni 2017) gemeten.

Iedere drie maanden was er een dataverzamelingsperiode van twee weken (in totaal zes keer), waarin de participanten iedere twee uur werd gevraagd te rapporteren of ze zojuist iets interessants hadden gedaan, besproken, gezien of gedacht. Meer dan 75 procent van de participanten nam deel tot het einde (N = 69), van wie er 13 een dataverzamelingsperiode hebben overgeslagen. In totaal hebben we dus van 56 participanten de interessegegevens van alle zes de perioden.

Naast het ESM-project hebben we een tweede deelproject uitgevoerd rond beroepskeuze-interesses. Voor dit project is er in april 2016, rond de tijd dat de leerlingen een profielkeuze moesten maken, een beroepskeuze-interessevragenlijst afgenomen bij een cohort havo/vwo-leerlingen van de vier scholen die ook deelnamen aan het ESM-project, plus een extra school. Hieronder beschrijven we de resultaten vanuit dat deelproject.

Hoofdstuk 2

In hoofdstuk 2 hebben we gebruikt gemaakt van een beroepskeuze-interessevragenlijst bij 358 middelbare scholieren uit klas 3 van havo en vwo om te bepalen in hoeverre adolescenten (on)gedifferentieerde beroepskeuze-interesseprofielen hebben. Vervolgens keken we naar hoe de mate van differentiatie in hun interessestructuur is gerelateerd aan hun profielkeuze, als ook aan het beeld van wat ze later willen worden. Het hebben van ongedifferentieerde interesses kan namelijk leiden tot onzekerheid over de toekomst, omdat interesses vaak het maatschappelijk referentiekader zijn voor studie- en beroepskeuzes (Holmegaard, 2015). Volgens Hollands' (1997) beroepskeuze-interessetheorie hebben individuen zes mogelijke interessedomeinen die op een hexagonaal model kunnen worden afgebeeld: Realistische, Intellectuele, Artistieke, Sociale, Ondernemende en Conventionele interesses (R-I-A-S-O-C). In essentie zijn beroepskeuze-interesses preferenties van een persoon voor een bepaald type beroeps- of werkgerelateerde activiteiten (Van Iddekinge, Putka, & Campbell, 2011).

Een Latente Profiel Analyse is toegepast om de RIASOC-interessepatronen te kunnen identificeren. Hieruit kwam naar voren dat een groot deel (40.8%) van de middelbare scholieren een gelijke mate van interesse (laag, midden of hoog) had in *alle* beroepsdomeinen (ongedifferentieerd profielen), en dat anderen (59.2%) een meer uitgesproken interesse hadden in enkele domeinen (gedifferentieerd profiel,

bijvoorbeeld in het Realistische en Intellectuele domein). Twee op de drie jongens hadden een ongedifferentieerd profiel, naast een op de vier meisjes. Leerlingen met een gedifferentieerd interesseprofiel waren eerder geneigd om een bepaalde profielkeuze te maken passend bij hun uitgesproken interesse dan leerlingen met een ongedifferentieerd interesseprofiel. Vooral leerlingen met een middelmatige interesse in alle domeinen (een neutraal-ongedifferentieerd profiel) waren divergent in hun profielkeuze en wisten vaak niet wat ze later wilden worden. Tegelijkertijd waren leerlingen met een laag- of hoog ongedifferentieerd interesseprofiel vaak wel in staat om te beschrijven wat ze later wilden worden, soms heel algemeen (ik wil met dieren werken), maar soms ook heel specifiek (ik wil dierenarts worden).

We hebben geconcludeerd dat de mate waarin adolescenten meerdere beroepskeuze-interesses hebben, verschilt; sommige adolescenten hebben al een zeer uitgesproken beroepskeuze-interesse aan het eind van klas 3, waar anderen nog (beperkte) interesse tonen in alle beroepsdomeinen. Voor deze laatste groep zou kunnen gelden dat adolescenten hun interesses nog verder gaan differentiëren naarmate ze meer in aanraking komen met werk of beroepen (Hirschi, 2009). Anderzijds zou het kunnen zijn dat de RIASOC-vragenlijst de aard van hun interesseprofiel onvoldoende in kaart heeft gebracht. Wellicht hebben deze adolescenten andere, of meer specifieke toekomstgerichte interesses, die zich ook buiten de wereld van school kunnen manifesteren; iets dat we hebben onderzocht in hoofdstuk 3.

Hoofdstuk 3

In hoofdstuk 3 hebben we ESM-gegevens gebruikt om te analyseren welke interesses adolescenten binnen en buiten school hebben. In totaal hebben we gegevens gebruikt van één dataverzamelingsperiode van twee weken van 42 adolescenten, een klein deel van het cohort dat we in hoofdstuk 2 hebben onderzocht. Ons doel was om de interesses die adolescenten ervaren in het dagelijks leven in kaart te brengen, omdat eerder onderzoek vaak gefocust was op (het gebrek aan) schoolse interesses of op buitenschoolse interesses. Ook hebben we onderzocht in hoeverre deze interesses werden gedeeld met familie, school- en buitenschoolse vrienden (wat we aanduiden als sociale continuïteit). In totaal rapporteerden de adolescenten 671 unieke interesses (met een range van 8-30 per persoon) gedurende de dataverzamelingsperiode van twee weken in Februari 2016. Onze resultaten lieten zien dat adolescenten interesse

ervaren in een groot aantal verschillende onderwerpen en activiteiten: media, vrije tijd (bijvoorbeeld sport en hobby's), maar ook school. Ook zagen we dat meer 'dagelijkse' aspecten als interessant konden worden ervaren, zoals eten, slapen, of tv-kijken. Adolescenten waren bovendien in meerdere contexten (met familie, school, of buitenschoolse vrienden) bezig met hun interesses, wat illustreert dat er bepaalde sociale continuïteit bestaat in de onderwerpen en activiteiten waar adolescenten in hun dagelijks leven mee bezig zijn (Barron, 2010). We onderscheiden drie vormen van sociale continuïteit. De eerste vorm van sociale continuïteit kwam gedurende de twee weken voor, waarbij adolescenten op verschillende momenten hun interesse afwisselend deelden met familie of vrienden van binnen of buiten school. Er was ook sociale continuïteit in situaties, bijvoorbeeld wanneer een interesse op een bepaald moment met zowel ouders als vrienden werd gedeeld. Tenslotte kon ook een sociaal contact van een adolescent sociale continuïteit vormen, bijvoorbeeld wanneer een hockeyteamgenoot ook een klasgenoot is. Sociale continuïteit van interesses bestond meestal uit schoolse- en buitenschoolse vrienden; in dat geval werden interesses van adolescenten met beide typen vrienden gedeeld.

Hoofdstuk 4

In hoofdstuk 4 was het doel om een meer genuanceerd en gedetailleerd beeld te schetsen van de rol die school speelt in interesse. Veel bestaand onderzoek claimt dat school als *oninteressant* wordt ervaren door adolescenten (bijv. Larson & Verma, 1999), maar concludeerde dit veelal op basis van geaggregeerde gegevens over specifieke interesses (bijv. wiskunde, Ufer et al., 2017). Door de persoon en diens interesse-ervaringen in het dagelijks leven centraal te stellen, in de studie beschreven in hoofdstuk 4, werd het mogelijk om te onderzoeken welke stimulerende, ondersteunende of belemmerende rol school kan spelen, zowel binnen de muren van de school als daarbuiten (bijvoorbeeld bij het thuis huiswerk maken).

In totaal hebben we 7239 interesse-ervaringen geanalyseerd, gerapporteerd door 44 adolescenten in vier dataverzamelingsperiodes (samen één schooljaar). Daaruit kwamen drie manieren naar voren waarop school terugkomt in de interesse-ervaringen van adolescenten. Allereerst waren de meeste leerlingen (N= 37) geïnteresseerd in het curriculum dat op school wordt aangeboden en de extra-curriculaire activiteiten, waarbij ze wel selectief waren in wat ze interessant vonden (bijv. Frans of leerlingenraad) en

hoe specifiek ze daarin waren (bijv. scheikunde of elektronen). Ook was er soms geen sprake van een interesse-ervaring bij een specifiek onderwerp terwijl de leerling wel interesse had in de bredere inhoud van een vak (bijv. deze scheikundeles was saai). Ten tweede was school ook terug te zien in de interesse-ervaringen als plek waar je met je leeftijdsgenoten kunt zijn of tijd kunt besteden aan overige interesses. Adolescenten (N = 29) richtten soms hun aandacht op iets anders dan de aangeboden leerinhoud, om hun tijd op school te verrijken (bijv. ik heb getekend tijdens wiskunde want de les was saai en dit maakte de les weer leuk). Tot slot refereerden sommige adolescenten (N = 21) aan school in het bezig zijn met vrijetijdsinteresses *buiten* school en huiswerk om, als een manier om bij te komen van school en zich later weer te kunnen concentreren voor school. Veel adolescenten keken Netflix of speelden games na school om te ontspannen en zich op te laden (bijv. ik beloon mezelf na al dat leren met een paar afleveringen van Pretty Little Liars).

Voor vier van de vijf adolescenten speelde school tegelijkertijd meerdere rollen. Voor de overige adolescenten gold dat school slechts op één manier zichtbaar was in hun interesse-ervaringen; één adolescent refereerde bijvoorbeeld alleen indirect aan school in zijn vrijetijdsactiviteiten als manier om met de druk van school om te gaan. Bovendien gold voor één adolescent dat school geen enkele rol leek te spelen in haar interesse-ervaringen in het dagelijks leven.

Hoofdstuk 4 heeft laten zien dat adolescenten zich in hun interesse-gerelateerde participaties op verschillende, karakteristieke manieren tot school lijken te verhouden. Interesses kunnen ontstaan door te participeren in school, maar school kan ook een (indirecte) rol spelen in het ervaren van interesse buiten de school. Onze studie bevestigt dat school een meerdimensionale praktijk is. School als praktijk kan meerdere rollen vervullen in interesse, meer dan alleen het leren of opdoen van kennis. In hoofdstuk 5 gaan we verder onderzoeken hoe school, net als andere praktijken in het dagelijks leven, een rol kan spelen in het *blijven bestaan* en ontwikkelen van interesse.

Hoofdstuk 5

In hoofdstuk 5 hebben we de mechanismen onderliggend aan langdurige interesses onderzocht, dat wil zeggen interesses waar adolescenten geregeld en over een langere periode tijd aan besteden (Prenzel, 1992). Eerder onderzoek schreef het voortbestaan

van interesses vaak toe aan bewuste intenties van een persoon terwijl de voorgaande hoofdstukken én indicaties uit ander recent onderzoek (Draijer et al., ingediend; Akkerman et al., 2019) aangeven dat ook praktijken en routines kunnen bijdragen aan het voortbestaan van interesses. Ons doel was dan ook om een gedetailleerd en gedifferentieerd inzicht te krijgen in de mechanismen die een rol spelen bij interesse-ontwikkeling, door alle interesse-ervaringen behorende bij langdurig bestaande interesses van moment tot moment te onderzoeken.

Voor hoofdstuk 5 hebben we 8281 interesse-ervaringen van in totaal 334 langdurig-bestaande interesses bekeken, afkomstig van de 56 adolescenten die aan alle zes dataverzamelingsperiodes hebben deelgenomen. Er zijn zes mechanismen geïdentificeerd: (1) het doeloriëntatiemechanisme, (2) het identificatiemechanisme, (3) het kenniswaarderings- mechanisme, (4) het chronotoopmechanisme, (5) het appreciatiemechanisme, en (6) het praktijk-participatiemechanisme. Allereerst konden individuen het voortbestaan van interesses beïnvloeden door bepaalde doelen na te streven (ik wil beter worden in pianospelen) of door zich te identificeren met het object van interesse (ik heb altijd gehouden van pianospelen). Ze refereerden dan in hun interesse-ervaringen aan beelden van zichzelf uit het verleden of de voorziene toekomst (Hofer, 2010; Krapp, 2002). Soms waren echter context- of object-specifieke eigenschappen betrokken bij het voortbestaan van interesses. Individuen konden bijvoorbeeld de opgedane kennis in een bepaalde situatie waarderen, bijvoorbeeld het leren van nieuwe dingen in de biologieles, of de positieve gevoelens die ze opdeden door te participeren in een bepaalde activiteit (tv-kijken). Ook kon een bepaalde verhaallijn adolescenten ertoe verleiden keer op keer tijd te willen besteden aan een interesse (bijv. spannende plots in boeken, films of series). Interesses konden ook voortbestaan door te participeren in een bepaalde praktijk zoals school, waar steeds nieuwe mogelijkheden voor het ervaren van interesse bestaan.

Er waren vaak tegelijkertijd meerdere mechanismen zichtbaar in het voortbestaan van interesses. Uit onze analyse kwam naar voren dat het van veranderingen in de materiële en sociale context afhing welk mechanisme het meest prominent was. Bijvoorbeeld: als je beste vriend stopt met volleyballen komt de nadruk misschien minder te liggen op het 'leuk vinden' van volleybal (appreciatiemechanisme) en meer op het beter worden (doeloriëntatie mechanisme). Interesse-ontwikkeling lijkt dus een dynamisch proces

dat sterk afhangt van de manier waarop iemand omgaat met een interesse, met name in verband met de (on)mogelijkheden die de omgeving biedt (zie ook Akkerman & Bakker, 2019; Azevedo, 2011). Op grond van de resultaten van hoofdstuk 5 kunnen we ons afvragen of 'persoonlijke interesse' wel een concept is dat voldoende recht doet aan de continue interactie en verwevenheid van personen, objecten en contexten in het dagelijks leven.

Discussie

Meervoudigheid van interesses. Overkoepelend laten de studies in dit proefschrift zien dat het hebben van meerdere interesses, oftewel meervoudigheid, een fenomeen is dat veel voorkomend is, zowel in het dagelijks leven als in relatie tot de toekomst/ beroepskeuzes. Hierbij hebben we voortgebouwd op eerder werk van Akkerman en Bakker (2019), Azevedo (2011; 2013; 2018), Barron (2006; 2010), Bergin (2016) en Hofer (2010) waarin al eerste indicaties te vinden waren dat adolescenten in verschillende interesses willen investeren. Hoewel eerder onderzoek veelvuldig heeft beweerd dat adolescenten school *oninteressant* vinden (bijv. Hidi & Harackiewicz, 2000), hebben we in dit proefschrift een meer genuanceerd beeld geschetst door te laten zien dat adolescenten wel degelijk interesse hebben in de schoolse inhoud (hoofdstuk 3 en 4) en tevens buitenschoolse interesses kunnen ervaren als interessant binnen de schoolse context (hoofdstuk 4).

Dit proefschrift heeft tevens laten zien dat adolescenten niet alleen prototypische interesses hebben gericht op media, sport- of en andere hobby's (hoofdstuk 3), maar geïnteresseerd kunnen zijn in routinematige bezigheden in het dagelijks leven, zoals eten of slapen (Kleiber et al., 2014; Larson & Verma, 1999). Ze zijn bijvoorbeeld bezig met de vraag hoe ze zo lekker mogelijk kunnen slapen, of over hoe ze hun te bereiden maaltijd nog lekkerder kunnen maken. We hebben ook aangetoond dat interesses idiosyncratisch zijn, oftewel kenmerkend voor de persoon (hoofdstuk 4). Dit kwam naar voren in de interesses die adolescenten rapporteren (bijv. scheikunde of elektronen), in de specifieke ervaringen (bijv. de ene les is wel, de andere les is niet interessant), maar ook in de mechanismen die de drijfveren vormen voor het ervaren van interesses over de tijd (hoofdstuk 5). Dit toont aan dat individuen in de adolescentie bezig zijn met het ontwikkelen van een interesseprofiel dat hen definieert als persoon (Hofer, 2010; Krapp, 2002).

Sociale continuïteit. In dit proefschrift hebben we laten zien dat interesse-gerelateerde participaties in het dagelijks leven met elkaar in verbinding kunnen staan (hoofdstuk 3, 4). Dit duidt erop dat adolescenten in het dagelijks leven binnen en tussen contexten bewegen en in staat zijn om mogelijkheden in interesse-ervaringen voor het verbinden van contexten te identificeren en gebruiken (Phelan et al., 1991; Barron, 2006). Media interesses lijken vaker in meerdere contexten te worden ervaren, wat indiceert dat de aard van de sociale continuïteit af kan hangen van het type interesse (hoofdstuk 3). Dit komt overeen met werk van Barron (2006), die heeft laten zien hoe media-interesses vaak buiten de grenzen van bepaalde contexten bestaan omdat de middelen die nodig zijn om bezig te zijn met de media-gerelateerde interesse (bijv. gsm) vaak gemakkelijk voorhanden zijn. Andere interesses waren meer contextgebonden, zoals het journaal kijken of make-up gebruiken, omdat deze activiteiten zijn verbonden aan bepaalde routines, gewoontes, en locatiegebonden middelen en/of materialen (Azevedo 2011; 2013; Akkerman & Bakker, 2019).

Sociale continuïteit kunnen we tevens verklaren door te kijken naar Hedegaard's (2012) concept 'motief', dat zij gebruikt om uit te leggen hoe kinderen zich oriënteren op bepaalde inhouden in verschillende voor hen betekenisvolle situaties. In hoeverre een interesse in meerdere situaties terugkomt en er dus sprake is van sociale continuïteit, heeft te maken met de motieven en daaruit volgende intenties van iemand om tijd te besteden aan bepaalde activiteiten of onderwerpen. Dit hebben we vooral onderzocht in hoofdstuk 5 (doelen en identificatie met het object van interesse).

Dynamiek in interesse-ervaringen in de tijd. Dit proefschrift heeft, middels gedetailleerde analyse van interesse-ervaringen in het dagelijks leven, in kaart gebracht hoe ervaringen kunnen verschillen van moment tot moment, waarbij iedere situatie andere sociale en materiële mogelijkheden biedt (hoofdstuk 4 en 5). Dit resultaat komt overeen met wat Hedges (2018) recentelijk omschreef als 'the fullness of life' (p.7), vrij vertaald als "dat wat adolescenten beleven in hun dagelijks leven bepaalt daadwerkelijk de interesse-ervaring". Een consequentie van deze bevinding is dat interesse-ontwikkeling een complex, fluïde proces is, en daardoor moeilijk te voorspellen. Dat is recentelijk ook gesteld door Akkerman en Bakker (2019) en Azevedo (2018). Tegelijkertijd heeft dit proefschrift, door naar heel veel verschillende momentane ervaringen van interesse te kijken, wel degelijk verschillende *patronen*

gevonden. Deze patronen beschrijven hoe interesses zich manifesteren in het dagelijks leven In hoofdstuk 4 hebben we bijvoorbeeld patronen gevonden in hoe adolescenten zich in hun dagelijkse interesse-ervaringen verhouden tot school. En in hoofdstuk 5 hebben we patronen geïdentificeerd in de drijfveren die achterliggend zijn aan het voortbestaan van interesses. Dit proefschrift toont aan dat de betekenis van patronen in processen op het niveau van personen pas zichtbaar wordt wanneer alle momenten dat adolescenten met een interesse bezig zijn achter elkaar worden gezet (Zittoun, 2014; Azevedo, 2018).

Aanbevelingen voor vervolgonderzoek

In het slothoofdstuk (hoofdstuk 6) noemen we een drietal aanbevelingen voor verder onderzoek. De eerste aanbeveling betreft het gebruik van nieuwe technieken zoals *textmining* voor het analyseren van grote hoeveelheden (tekstuele) data. In de analyses die zijn gedaan voor dit proefschrift zagen we hoe de *labels* die adolescenten toekennen aan hun interesses kunnen veranderen over de tijd. Dit kunnen kleine veranderingen zijn zoals 'voetbal' en 'voetballen', maar ook grotere veranderingen zoals 'hockey' en 'wedstrijd fluiten (bij hockey)'. Vooral voor de studie beschreven in hoofdstuk 5 was het van belang om te bepalen wanneer een interesse gelijk bleef of veranderde, omdat we het voortbestaan van interesses bestudeerden. Eén adolescent had bijvoorbeeld een interesse in 'Netflix' maar noemde in latere dataverzamelingsperioden een interesse in 'Pretty Little Liars'. Op basis van de interesse-ervaringen hebben we toen bepaald dat deze interesse dezelfde inhoud weerspiegelde, omdat hij/zij vóór deze verandering ook al de serie 'Pretty Little Liars' keek. Een dergelijke analyse-aanpak kost echter tijd en technieken zoals *textmining* zijn daarom welkom. Deze geavanceerde technieken kunnen systematisch en efficiënt met dit type problematiek omgaan, in het bijzonder van belang voor toekomstig, grootschaliger onderzoek dat gebruik maakt van tekstuele data ten aanzien van interesse-ervaringen.

Een tweede aanbeveling voor vervolgonderzoek betreft het toepassen van interviewtechnieken *naast* het verzamelen van ervaringen om beter grip te krijgen op het complete interesse-profiel van adolescenten. Zo hebben we in dit proefschrift iedere drie maanden twee weken lang interesse-ervaringen gemeten. Hoewel dit ons een gedetailleerde kijk heeft gegeven op de interesses van middelbare scholieren, bleven bepaalde seizoen- of vakantie gebonden interesses wellicht buiten beeld.

Skiën, carnaval of surfkamp zijn voorbeelden van interesses die we niet of nauwelijks terugzagen, omdat we geen data hebben verzameld in de (vakantie)weken dat er tijd werd besteed aan deze interesses. Vervolgonderzoek zou er daarom goed aan doen om adolescenten enkele keren tijdens het onderzoek te interviewen om te valideren aan welke andere interesses ze voor of na de weken dat ze 'inTin' invulden, hun tijd besteedden.

Aanvullende dataverzamelingstechnieken zoals interviews of observaties zouden ook kunnen helpen bij het onderzoeken van nieuwe empirische vragen, bijvoorbeeld betrekking tot de gelijkenissen tussen interesses over personen heen (bij. Netflix of YouTube). Een specifieke vraag voor vervolgonderzoek zou kunnen zijn hoe verschillende personen betekenis en richting geven aan de interesse YouTube (of een andere veelvoorkomende interesse), en ook hoe de sociale en materiële werkelijkheid van die personen de ontwikkeling van deze interesses over tijd belemmert of begunstigt.

Praktische implicaties

Tot slot noemen we in hoofdstuk 6 twee praktische implicaties van het onderzoek beschreven in dit proefschrift. De eerste betreft de verplichte profielkeuze aan het eind van klas 3 in havo en vwo. Aangezien dit proefschrift heeft laten zien dat bijna de helft van de leerlingen gelijke (des)interesse toont in alle beroepsdomeinen, kan men de vraag stellen of het kiezen van verschillende profielen niet moet worden aangepast, opdat leerlingen met meerdere interesses of talenten zich ook breder kunnen ontplooien. Het zou bijvoorbeeld mogelijk gemaakt kunnen worden om een extra taal te kiezen binnen een natuurprofiel, als een leerling interesse zou hebben in Frans of Spaans. Wel zou er rekening moeten worden gehouden met de studiebelasting. De voortgezet onderwijssector zou hierbij kunnen kijken naar het Utrechts Onderwijsmodel, dat studenten aan de Universiteit Utrecht in staat stelt om naast hun verplichte bachelor programma in de vrije keuze ruimte cursussen (van andere Faculteiten) te volgen.

Tevens willen we benadrukken dat, hoewel de meeste leerlingen geïnteresseerd bleken in school, er een minderheid in ons onderzoek was die zich van school als leerpraktijk leek te distantiëren, door helemaal niet aan school te refereren of enkel aan school als 'verplichting'. Voor de onderwijspraktijk is het van belang deze leerlingen vroegtijdig op te sporen en manieren te vinden om ze bij het leren in school te betrekken, bijvoorbeeld

door hun onderwijs gericht te personaliseren (Reber, Canning & Harackiewicz, 2018). Zo kan bijgedragen worden aan het voorkomen van eventuele vroegtijdige schooluitval en worden leerlingen geholpen bij het ontwikkelen van een coherent zelfbeeld.

Conclusie

De studies beschreven in dit proefschrift hebben in vergelijking met eerder onderzoek een completer en gedetailleerder inzicht gegeven in de verschillende, gelijktijdig door adolescenten ervaren interesses in het dagelijks leven. Daarnaast is aangetoond met wie ze deze interesses delen en op welke manieren ze deze interesses ervaren binnen en tussen contexten. Tot slot is inzicht ontstaan in de complexe aard van (langdurige) interesse-gerelateerde participaties in het dagelijks leven, met name in de dynamische relatie tussen adolescenten en hun objecten en contexten, die tezamen bepalen hoe een interesse-ervaring op een bepaald moment tot stand komt.

CURRICULUM VITAE

Esther Slot was born in 1988 in Rotterdam. After completing secondary education (atheneum) in Ermelo in 2007, she attended Utrecht University. In 2010 she obtained her bachelor degree in Pedagogical Sciences, after which she completed the research master Educational Sciences: Learning in Interaction in 2013 with honours.

From 2013-2014 Esther worked as an educational consultant for Educational Consultancy & Professional Development at Utrecht University. In 2014, she started working as a PhD student at the Department of Education. From 2014 to 2018 she continued combining her work as a PhD with working as an educational consultant. She worked at ICLON Leiden University from 2016 to 2018, but moved back to Utrecht University with Sanne Akkerman. From 2018 to 2019, she fully focused on writing her dissertation.

After finishing her dissertation, Esther picked up her work as an educational consultant at Utrecht University and is currently working on different projects in the field of primary and higher education.

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Het laatste stuk zal ook wel gaan
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