Valuing variability

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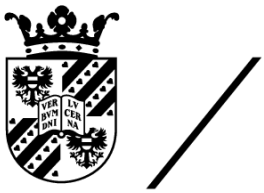

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ABSTRACT

Valuing variability: Dynamic usage-based principles in the L2 development of four Finnish language learners

The general aim of this study is to trace the second language (L2) development of four beginner learners of Finnish over one academic year from a dynamic usage-based perspective. Contrary to many previous studies, this study starts out from meanings, not forms. In other words, an onomasiological approach is adopted. The aim is to investigate what kind of constructions the learners use to express 1) evaluation and 2) existentiality. In line with a dynamic usage-based approach, the goal is to investigate three aspects of development: 1) the interaction between different linguistic means used to express a certain meaning and between the instruction and learning trajectories, 2) variability patterns in different subsystems and in different constructions, and 3) the abstractness of the constructions the learners used. Free response data consisting of both written and spoken texts were collected weekly from the four university students over a nine-month period. The findings are reported in four research articles and in the overview. They point to some general patterns in L2 development, even though the details show that L2 development is individually owned. For all learners, the constructions that they used to express evaluation show a competitive interaction with each other, although the timing of the phases of competition differed among the learners. For all learners, a higher degree of variability in the use of evaluative constructions could be detected at times of rapid progress than at times of slower progress. When two evaluative constructions were compared in terms of their abstractness, it was found that different levels of abstractness characterized their initial use. With expressions of existentiality, individual learning paths were also found: some learners tried out only a few different linguistic means to express this idea and seemed to need the instruction to point out the target construction. This study shows that starting an investigation of L2 development from meaning can give us valuable information about the mechanisms of change in a developing L2.

Keywords: Finnish as a second language, second language learning, complex dynamic systems theory, usage-based approaches to language learning, variability

TIIVISTELMÄ

Vaihtelu vahvuutena: Neljän suomi toisena kielenä -oppijan kielenkehittyminen dynaamisesta käyttöpohjaisesta näkökulmasta

Tässä väitöstutkimuksessa on seurattu neljän aikuisen alkeistason suomen kielen oppijan kielenkehittymistä yhdeksän kuukauden ajan. Toisin kuin useissa aikaisemmissa tutkimuksissa, oppijankieltä on tässä tutkimuksessa lähestytty merkityksistä käsin ja aineiston valinnassa on käytetty onomasiologista lähestymistapaa, joka etsii nimityksiä tietylle asialle tai ilmiölle. Tässä tutkimuksessa on ollut tavoitteena selvittää millaisia kielellisiä keinoja neljä oppijaa käyttää ilmaisemaan 1) arvioita (jokin asia hyvä/huono tai toivottava/ei-toivottava) ja 2) eksistentiaalisuutta (esim. *Suomessa on paljon järviä*) ja miten nämä ilmaukset kehittyvät yhdeksän kuukauden aikana. Tutkimus pohjaa kahteen teoreettiseen viitekehykseen: dynaamisten systeemien teoriaan ja käyttöpohjaisiin kielenoppimisen malleihin ja keskittyy kolmeen aspektiin kehittyvässä oppijankielessä: 1) erilaisten kielellisten keinojen väliseen vuorovaikutukseen (nk. osasysteemien välinen vuorovaikutus), 2) oppijoiden välillä esiintyvään vaihteluun (englanniksi variation) sekä yhden oppijan ilmauksissa esiintyvään vaihteluun (variability) ja 3) oppijankielen konstruktioiden skemaattisuuden kehitykseen. Aineisto on kerätty viikoittain yhdeksän kuukauden ajalta, ja se koostuu sekä puhutuista että kirjoitetuista teksteistä. Tulokset on raportoitu neljässä tutkimusartikkelissa. Tulokset osoittavat, että vaikka kielen kehittyminen on yksilöllistä, voidaan oppimisessa havaita tiettyjä samankaltaisuuksia. Kaikilla oppijoilla arvioinnin ilmaisemiseen käytetyt erilaiset konstruktiot (osasysteemit) ovat kilpailevassa vuorovaikutussuhteessa keskenään, mutta näiden kilpailuvaiheiden ajoitus on erilainen. Kaikille oppijoille yhteinen piirre on myös se, että kilpailevassa vuorovaikutussuhteessa kehityksen alla olevan osasysteemin konstruktioiden frekvensseissä on paljon vaihtelua. Kahden arvioinnin ilmaisemiseen käytetyn verbikonstruktion skemaattisuuden aste vaihtelee oppijoiden ja konstruktioiden välillä: osa konstruktioista kehittyy kiteytyneistä ilmauksista, osa on melko skemaattisia jo heti oppimisen alkuvaiheessa. Eksistentiaalisuuden ilmaisemiseen käytetyissä konstruktioissa on eroja oppijoiden välillä. Osa oppijoista kokeilee erilaisia tapoja ilmaista eksistentiaalisuutta jo ennen kuin rakenne on käyty läpi opetuksessa. Toisten oppijoiden ilmauksissa esiintyy paljon vähemmän vaihtelua ja opetuksen vaikutus oppimisen suuntaajana on näillä oppijoilla suurempi. Tämä tutkimus osoittaa, että oppijankielen kehityksen tutkiminen merkityksistä käsin antaa mahdollisuuden päästä lähemmäs oppijoiden kommunikatiivia tarpeita ja näin ollen myös mahdollistaa oikea-aikaisen tuen opetuksella.

Avainsanat: suomi toisena kielenä, toisen kielen oppiminen, dynaamisten systeemien teoria, käyttöpohjaiset kielenoppimisen mallit, vaihtelu

SAMENVATTING

Variabiliteit waarderen: Dynamic Usage Based principes in de L2-ontwikkeling van vier Finse taalleerders

Het algemene doel van deze studie is om de ontwikkeling van de tweede taal (L2) van vier beginners van Fins gedurende een academisch jaar te volgen vanuit een dynamisch, op gebruik gebaseerd perspectief. In tegenstelling tot veel eerdere studies, begint deze studie met betekenis, niet met vorm. Met andere woorden, er wordt voor een onomasiologische benadering gekozen. Het doel is om te onderzoeken welke soort constructies de leerders gebruiken om 1) evaluatie en 2) existentialiteit uit te drukken. In overeenstemming met een dynamische, op gebruik gebaseerde benadering is het doel om drie aspecten van ontwikkeling te onderzoeken: 1) de interactie tussen verschillende taalmiddelen die worden gebruikt om een bepaalde betekenis uit te drukken en tussen de instructie- en leertrajecten, 2) variabiliteitspatronen in verschillende subsystemen en in verschillende constructies, en 3) de abstractheid van de constructies die de leerders gebruikten. Vrije responsgegevens bestaande uit zowel geschreven als gesproken teksten werden wekelijks verzameld bij de vier universitaire studenten gedurende een periode van negen maanden. De bevindingen, die worden gerapporteerd in vier onderzoek artikelen, zijn als volgt: Ondanks het feit dat L2-ontwikkeling grillig is en een individueel traject is, laten wijzen ze ook op enkele algemene patronen in L2-ontwikkeling. Voor alle leerders tonen de constructies die ze gebruikten om evaluatie uit te drukken een competitieve interactie met elkaar aan, ook al verschilde de timing van de fasen van competitie tussen de leerders. Voor alle leerders kon een hogere mate van variabiliteit in het gebruik van evaluatieve constructies worden gedetecteerd in tijden van snelle vooruitgang dan in tijden van langzamere vooruitgang. Toen twee evaluatieve constructies werden vergeleken in termen van hun abstractheid, bleek dat verschillende niveaus van abstractheid hun aanvankelijke gebruik kenmerkten. Met uitingen van existentialiteit werden ook individuele leerpaden gevonden: sommige leerlingen probeerden slechts een paar verschillende talige middelen uit om dit idee uit te drukken en leken ze de instructie nodig te hebben om de doelconstructie te ontdekken. Deze studie toont aan dat het beginnen van een onderzoek naar L2-ontwikkeling vanuit betekenis ons waardevolle informatie kan geven over de mechanismen van verandering in een zich ontwikkelende L2.

Sleutelwoorden: Fins als tweede taal, tweede taal leren, complexe dynamische systeemtheorie, op gebruik gebaseerde benaderingen van het leren van talen, variabiliteit

PREFACE

In my dissertation, I argue that language learning is a dynamic process in which various internal and external resources affect the learner's individual learning path. The process of writing a PhD is also a complex, dynamic process in which a number of external resources play an important role. It is now time for me to express my gratitude for the 'external resources' I have benefitted from during this process - all the people who have made this journey unforgettable.

First, I want to thank my three wonderful supervisors, Minna Suni, Marjolijn Verspoor, and Rasmus Steinkrauss. It is not necessarily an easy situation to have three supervisors from two different universities in two different countries, but in our case, things have worked out smoothly and I would like to thank you all for this. Thank you all for believing in me also in those moments when I temporarily lost confidence in myself. Thank you for your insightful and detailed comments on my texts. Thank you for supporting my growth as a researcher and as a person. Minna, kiitos kun olet osoittanut luottamuksesi minuun ja kasvaviin tutkijantaitoihini jo oikeastaan ennen kuin tutkimus pääsi kunnolla edes alkuun. Kiitos kun et päästänyt minua helpolla väitöskirjan viimeistelyvaiheessa, kun itse olin jo valmis luovuttamaan. Marjolijn, thank you for encouraging me to make brave choices with regard to the research problems and choosing the journals. This study would have been very different without your encouragement and support. Thank you for sharing your knowledge about academic writing; I've learned a lot from you. Rasmus, thank you for all the fruitful and inspiring discussions about research and life. I have learned so much from you and with you.

I also want to express my gratitude to the four reviewers of my dissertation. Thank you Teresa Cadierno, Annekatrin Kaivapalu, Wander Lowie, and Maisa Martin for your time, thorough work and very helpful comments. With your excellent observations and insights I was able to improve the quality of my dissertation. I also would like to thank Heike Behrens, Kees de Bot, Karen Roehr-Brackin, Merel Keijzer, and Marije Michel for taking part in my defence committee.

Iso kiitos tämän tutkimuksen osallistujille Lenalle, Jungolle, Alvarolle ja Khadizalle! Kiitos kun jaksoitte olla mukana viikoittain kokonaiset yhdeksän kuukautta.

Several people have read different versions of my texts, whether as funding applications, conference abstracts, article manuscripts, or the manuscript of the overview. My warm thanks for your valuable insights and comments go to Hilkka Paldanius, Laura Eilola, Maaria Oksala, Miia Konttinen, Kari Eskola, Paul Ibbotson, Tua Takkinen, and Amarins Hielkema. Special thanks to Maaria, who helped me to improve the introduction to my overview and the Finnish summary. The language of the articles as well as the overview were edited by Eleanor Underwood. Thank you for your thorough work! All remaining errors are my own. I have always enjoyed participating in conferences because they have given me wonderful opportunities to discuss my

work with other researchers. I would like to thank everyone who has given their comments on my work during conferences. I would like especially to thank Hana Gustafsson, Nick Ellis, Paul Ibbotson, Karin Madlener, Heike Behrens, Kees de Bot and Diane Larsen-Freeman for your time and insightful comments on my work.

Useat henkilöt ovat auttaneet minua tutkimuksen eri vaiheisiin liittyvissä tehtävissä. Kiitos Heli Hämäläinen ja Reetta Ronkainen avustanne äidinkielisten puhujien aineiston keruussa. Kiitos Maaria Oksala, Vesa Jarva ja Marja Seilonen osallistujieni tekstien taitotason arvioinnista. Kiitos Maiju Strömmer, Aija Virtanen, Katharina Ruuska, Laura Eilola ja Maaria Oksala osallistujieni arvioinnin ilmausten valinnan validoinnissa. Kiitos Kirsi Leskinen avustasi aineiston koodaamisessa.

This study is a joint project between the University of Jyväskylä and the University of Groningen. This collaboration has given me a wonderful opportunity to live and work both in Jyväskylä and in Groningen and build up networks and make friends in two places. I would like to thank my fellow PhD students in both universities: Audrey Rousse-Malpat, Ting Huang, Giulia Sulis, Marita Everhardt, Susanne Dekker, Wim Gombert, Mara van der Ploeg, Jan Blaauw, Loes Groen, Dymphi van der Hoeven, Laura Stiefenhöfer, Anna Pot, Huimin Ke, Pouran Sheifi, Steven Gilbers, Bregtje Seton, Nienke Smit, Amanda Brouwers, Alisa van de Haar, Yu Sun, Hongying Peng, Joëlle Swart, Desiree Krikken, Masha Medvedeva, Vass Verkhodanova, Héctor Gallegos, Irene Mognon, Arnab Dutta, Nina Reiman, Maiju Strömmer, Aija Virtanen, Katharina Ruuska, Kirsi Leskinen, Annastiina Kettunen, Tanja Seppälä, Minna Martikainen, Reetta Ronkainen, Sanna Voipio-Huovinen, Tanja Mylläri, Virpi Masonen, Hilkka Paldanius, Jutta Helenius, Elina Salomaa, Marianne Kärkkäinen, Anna Kaikkonen, Saeed Karimi-Aghdami, Anna Puupponen, Henna Heinonen, Zahra Edalati Kian, Päivi Iikkanen, Tuire Oittinen, Maria Kautonen, and Pauliina Sopanen. Special thanks to Audrey, Ting, Giulia, Maiju, Aija, Hilkka, Anna and Katharina for all the discussions about L2 learning, dynamic systems, writing, and other stuff. Kiitos myös Marja Seiloselle, Sanna Mustoselle ja Mari Hongolle.

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Tein väitöskirjaprosessini aikana kaksi videota, joissa popularisoin väitöskirjani teemoja. Lämmin kiitos kaikille, jotka auttoivat minua näiden videoiden tekemisessä. Kiitos Elina Jokinen Tieteen popularisointi -kurssista, jonka kurssityönä Kilpailua kielessä -video toteutettiin. Kiitos myös kaikille kurssilaisille vertaistuesta ja ideointiavusta. Erityiskiitos Artur Kazmertsuk avustasi videon suunnittelussa sekä erinomaisesta työstäsi videon kuvaamisessa ja editoinnissa. Kiitos videolla esiintyville Sinille, Katharinalle ja Karolle. Videolla Functional Mistakes esiintyville Hennalle, Petralle ja Nellille

lämmin kiitos. Tämä video toteutettiin yhteistyössä Koljontie Production -yrityksen kanssa, kiitos Sini Järnström hyvästä yhteistyöstä. Functional Mistakes -videon tekemistä on rahoittanut Koneen Säätiö, kiitos teille!

Olen suorittanut väitöskirjaprossesin aikana useita tiedeviestinnän kursseja, joilla olen pääsyt kehittämään viestintätaitojani. Kiitos kaikille opettajille ja vertaisopiskelijoille! Erityiskiitos Elina Jokiselle inspiroivasta kirjoitusviestinnän opetuksesta ja Konneveden kirjoitusretriitistä marraskuussa 2019. When living in Groningen, I also took Dutch courses, which was helpful for my research. Thank you for my teacher, Birgitta Lijmbach.

Olen saanut tutkimukselleni rahoitusta useista eri lähteistä. Lämmin kiitos työskentelyapurahoista Jyväskylän yliopiston humanistinen tiedekunta, Ellen ja Artturi Nyyssösen säätiö, Ella ja Georg Ehrnroothin säätiö ja Suomen Kulttuurirahaston Keski-Suomen rahasto.Matka-apurahaa konferenssimatkoille ja tutkimusvierailuihin olen saanut Suomalaiselta Konkordialiitolta ja Jyväskylän yliopiston Kieli- ja viestintätieteiden laitokselta.

In Groningen, many people helped me to feel more at home. First, I want to thank my wonderful paranymphs: Audrey Rousse-Malpat and Ting Huang. Audrey, thank you for your friendship and for helping me with so many things. I am grateful that I could share the office with you during my first research visit in Groningen. It was a pleasure to work with you. Ting, thank you for your friendship, support, and kindness. Life would be much darker without you, my Chinese girl. To Giulia, Justina, Nate, Marianne, Marijke, Suvi, Amarins, Maarten, Michael and Maeby, Brenda, Tristan, Ana, Jantina, Sofie, Jessica, and Ana: Thank you for your friendship and all the fun things we did together while I lived in Groningen. I also want to thank my Aunt Ulla for inviting me to Oldenburg; those Finnish weekends were always great. Kiitos kaikille ystäville Suomen päässä, olette olleet mahtavana tukena. Erityiskiitos Minna Ö, Tua, Maiju, Aija, Jaana, Laura E., Maaria, Katharina, Anna, Laura M. ja Dory, Tea, Kari, Katri, Aino, Maija, Sini, Tanja, Janne ja Claire. Kiitos Orivesi All Stars, kansanmusiikin soittaminen teidän kanssa on auttanut löytämään hyvää rytmiä ja rentoutta myös tutkimustyöhön ja kirjoittamiseen. Kiitos Family Lesonen. On uskomaton etuoikeus saada kuulua tähän perheeseen.

This has been an amazing journey along which several factors have been in complex interaction. I have tried my best to follow the advice Kees de Bot once gave to me and Ting when we were preparing our conference papers: it is almost always good to remove complex things. As a result of following this piece of advice I have seen with great pleasure how, towards the end of the process, the different parts and subsystems of this complex, dynamic system that is my dissertation have finally self-organized.

Jyväskylä-ssä 20.4.2020
Jyväskylä-INE
'In Jyväskylä'

Sirkku Lesonen

LIST OF ORIGINAL ARTICLES

The dissertation consists of the Overview and the following research articles referred to as substudies 1–4 in the text.

1. Lesonen, S., Suni, M., Steinkrauss, R. & Verspoor, M. 2017. From conceptualization to constructions in Finnish as an L2: a case study. Pragmatics & Cognition. 24:2. 212–262.

2. Lesonen, S., Steinkrauss, R., Suni, M. & Verspoor, M. Dynamic Usage-Based Principles in the Development of L2 Finnish Evaluative Constructions. Accepted for publication. Applied Linguistics.

3. Lesonen, S., Steinkrauss, R., Suni, M. & Verspoor, M. Lexically specific vs. productive constructions in L2 Finnish learners. Accepted for publication. Language & Cognition.

4. Lesonen, S., Steinkrauss, R., Suni, M. & Verspoor M. Variability and the effect of instruction in L2 Finnish. Manuscript.

FIGURES

TABLES

CONTENTS

1 INTRODUCTION

1.1 Starting points and aims of the study

Adult second language (L2) learners who are learning a language in the target-language-speaking community need to express relatively complex meanings from the very beginning of their language learning process. Adult learners' communicative needs are therefore often not in balance with their limited proficiency in the second language. This may result in imprecise or unconventional ways of expressing meanings, as shown by the two examples below - produced by two participants in this study.

(1) *Hän voi puhua bangla hyvä ja suomea ei hyvä mutta, mm, hyvä.*
She can speak Bangla good and Finnish no good, but, mm, good.

(2) **Talvella se ei ole aurinko Suomessa.*
*In the winter, it is not the sun in Finland.

In Example 1, the participant, Khadiza, is evaluating the language proficiency of a relative of hers. The message gets through. We understand that the relative's proficiency in Bangla is good but that her proficiency in Finnish is average: it is neither high nor very low. Khadiza seems to feel a need to describe her relative's proficiency in Finnish in greater detail, but her limited resources in Finnish prevent her from expressing the targeted meaning precisely. In Example 2, another participant, Lena, aims to convey the meaning that is conventionally expressed with an existential construction, *Suomessa ei ole aurinkoa talvella* 'There is no sun in Finland in the winter'. Lena manages to express her idea, even though the linguistic means that she uses are unconventional.

This study focuses on these kinds of expressions - learner language [1] constructions. The aim of the study is to investigate how four adult, highly educated, beginner learners of Finnish manage to express certain meanings with their limited L2 resources and how their constructions develop over time. A key aspect of learning a new language is learning to make associations between meanings and forms (phonetic or orthographic), and learning to use these form-meaning mappings, i.e., constructions (see e.g. Langacker 1999; Tomasello 2000; Goldberg 2006;), in a more target-like way. One example of a form-meaning mapping and its use is illustrated in Figure 1.

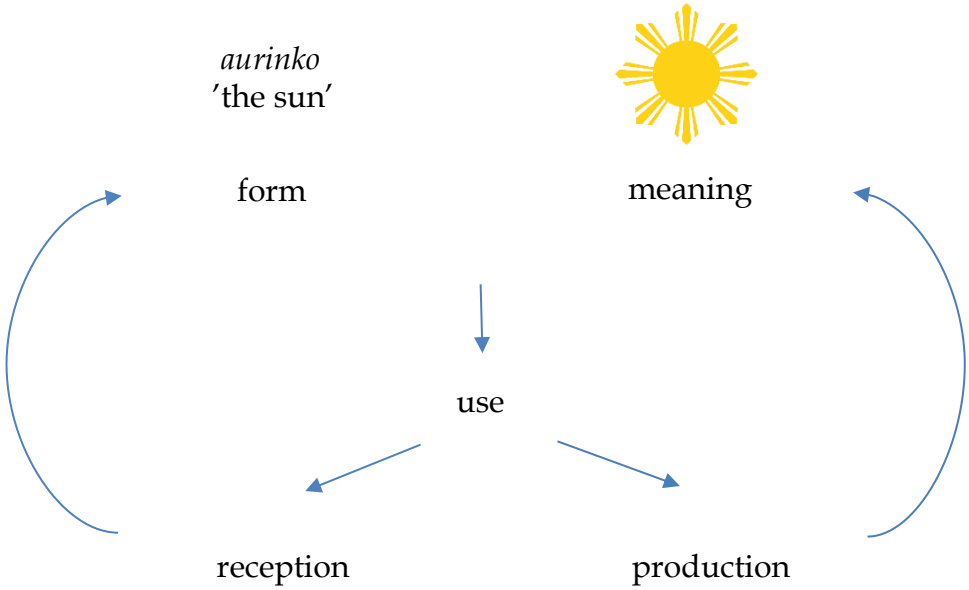

Figure 1 An example of a form-meaning mapping – a construction – and its use in both production and reception

When expressing a certain idea with a language, i.e., in production (vs. understanding language, which is reception), a speaker starts from the meaning pole of the form-meaning mapping unit. In other words, the speaker needs to think what kind of forms could be used to express the targeted meaning. For example, they might want to know what word can be used to refer to the star at the center of the Solar System. This is the association between meaning and form. In this study, the investigation of L2 development also starts from the meaning pole. The aim is to

[1] In this study, the term *learner language* is used to refer to the developing language that is used by L2 learners. Language development may include phases of progress and regress (Larsen-Freeman 2013). It is a process without an actual endpoint (Hopper 1998) and therefore, broadly speaking, every speaker's language is developing. However, in this study, the term learner language is used to refer to beginner L2 learners' language, in which more changes are assumed to take place than in the language of highly proficient speakers.

investigate what kind of linguistic forms L2 Finnish learners use to express two meanings, 1) **evaluation** and 2) **existentiality**, and how these constructions develop over time. When expressing evaluation, the speaker expresses his or her opinion on something: whether the thing is good or bad, or whether he or she likes it, for example (see Example 1). When expressing existentiality, the speaker expresses the idea that there is or is not something somewhere (see Example 2).

In this study, the development of the learners' use of constructions to express these quite central meanings is investigated longitudinally, and three particular aspects of their language development are studied: the **interaction of subsystems**, **variability**, and **abstractness**. The key areas of interests are shown in Figure 2.

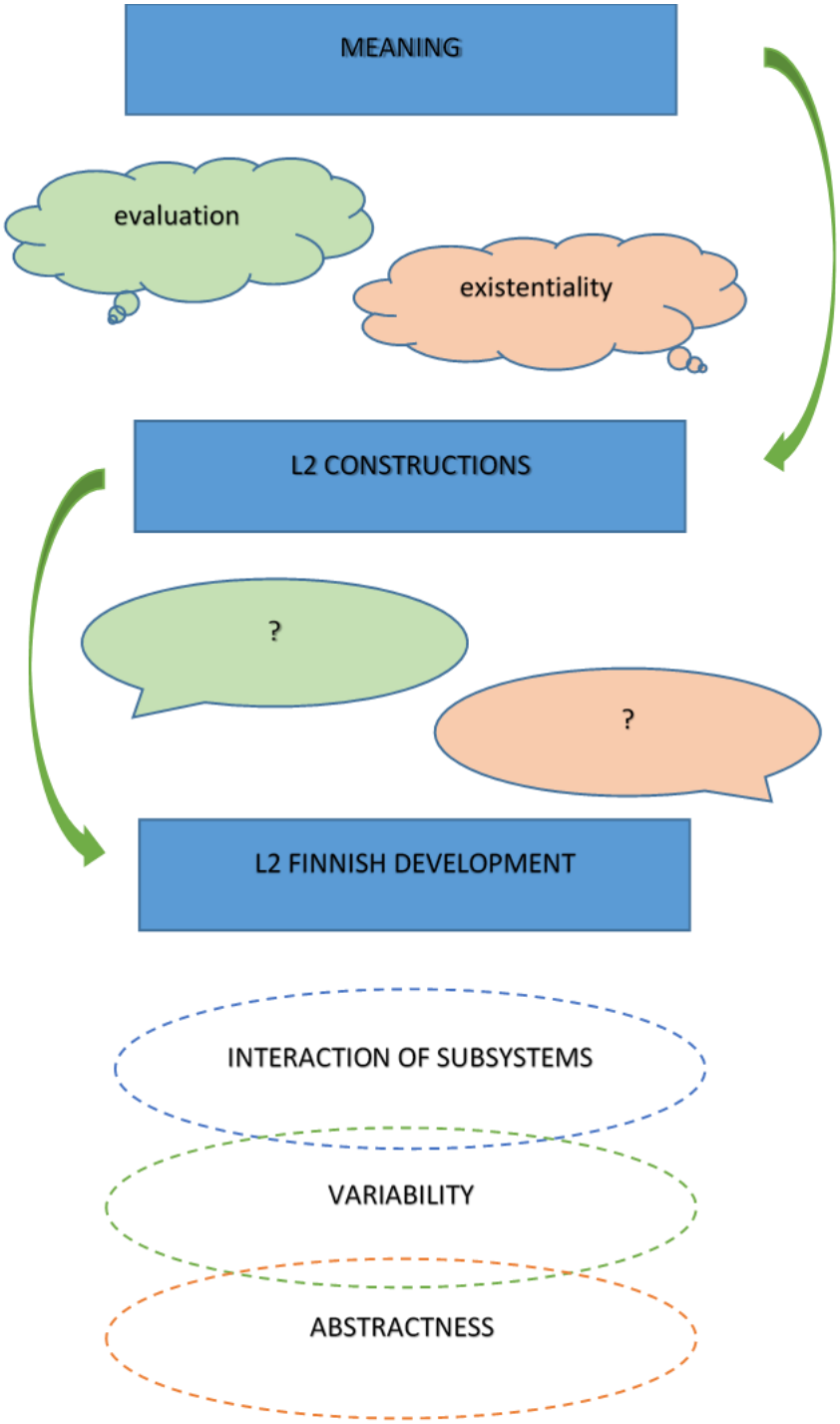

Figure 2 Key areas of interest in this study

In Figure 2, the thought bubbles stand for the two meanings from which the investigation begins. The L2 constructions are visualized with speech bubbles with a question mark because the aim is to investigate what constructions are used to express evaluation and existentiality. The three aspects of the development of these constructions are shown in three overlapping circles.

This study is situated in the field of applied linguistics, more specifically in the field of (Finnish as a) second language research. The theoretical framework used in this study – the dynamic usage-based approach (DUB) – is a combination of two approaches that have been applied in a number of studies on L2 development. These two approaches, Complex Dynamic Systems Theory and Usage-Based Linguistics, are compatible because they both see L2 development as a dynamic process. In this process, changes emerge non-linearly from the interaction of different parts of learner language and from its interaction with its environment. These two theoretical perspectives have been brought together in a number of earlier studies: for example Langacker (2009) describes usage-based L2 learning as a dynamic process and Roehr-Brackin (2015) combines usage-based and complexity theory perspectives in her case study of an L2 German learner. The DUB approach has been explicitly used by e.g. Verspoor, Schmid and Xu (2012), Koster (2015), and Rousse-Malpat (2019). The dynamic usage-based approach (see Langacker 2009; Verspoor & Behrens 2011; Verspoor, Schmid & Xu 2012; Roehr-Brackin 2015) views the three areas of interest of this study (see Figure 2) as crucial in language development.

The first aspect, the interaction of subsystems, is important because the changes taking place in the learner language are seen to emerge from the interaction of different parts of the learner's linguistic system. For example, when the learner expresses an evaluation of something using a certain expression (e.g. *Hän voi puhua bangla hyvä* 'She can speak Bangla good'), their whole network of evaluative expressions changes: the network expands and becomes reorganized, and the strength of the connections between the expressions changes. The learner language is hence a dynamic system in which changes emerge over time from the interaction of different expressions or types of expression, i.e., subsystems. (e.g. van Geert 2007; Caspi 2010; Spoelman & Verspoor 2010; van Dijk, Verspoor & Lowie 2011; Verspoor & van Dijk 2011; Tilma 2014; Chan, Verspoor & Vahtrick 2015; Lowie & Verspoor 2018.)

The second aspect of interest, variability, refers to the uneven and varied use of constructions over time. When the learner expresses meanings in social interaction, some expressions might be overused at certain points of development, and others might disappear temporarily from the learner's production. These two aspects - interaction and variability - have been studied before in CDST-oriented studies. (e.g. van Geert 2007; Caspi 2010; Spoelman & Verspoor 2010; van Dijk, Verspoor & Lowie 2011; Verspoor & van Dijk 2011; Tilma 2014; Chan, Verspoor & Vahtrick 2015; Lowie & Verspoor 2018.)

The third aspect of interest in the present study is abstractness. As learner language develops, constructions at different levels of abstractness emerge in the L2. For example, initially the learner might express evaluation almost exclusively with a lexically specific expression, *Se on hyvä* 'It is good'. Later on, other, similar kinds of expressions such as *Se on kiva* 'It is nice' or *Se on mielenkiintoinen* 'It is interesting', are also used. Based on the formal and functional similarities of these constructions, the learner may form an abstract category of words evaluating things. In other words, the learner develops an abstract category of evaluative words. This aspect has been studied in usage-based oriented studies. (e.g. Tomasello 2000, 2003; Dąbrowska 2001;

Dąbrowska & Lieven 2005; Eskildsen 2009, 2012, 2015; Eskildsen & Cadierno 2007; Lieven, Salomo & Tomasello 2009.)

To summarize the aims of the current study, the general aim is to trace the development of the constructions that four L2 Finnish learners use to express meanings of evaluation and existentiality. These two concepts can be seen as fruitful material for comparison for two reasons. First, they were expressed frequently by the participants in this study, probably because they are very basic and fundamental aspects of cognition and of how we see the world. We tend to evaluate things around us and we tend to want to express the fact that someone or something exists. Second, these concepts are different in terms of how they are expressed in Finnish: evaluation can be expressed with several different constructions (e.g. with a verb such as *tykätä* 'like', with an adjective such as *kiva* 'nice', or with a noun such as *tuska* 'agony'), but existentiality can only be expressed with one construction (e.g. *Suomessa on paljon järviä* 'There are many lakes in Finland'). The three aspects of development, shown in Figure 2, in the expression of these meanings are studied here. The specific research questions are presented in the next section.

1.2 Research questions and outline of the study

The general aim of this study is to trace the language development of four adult beginner learners of Finnish over one academic year. More specifically, the aim is to investigate what kind of linguistic forms these four L2 Finnish learners use to express evaluation and existentiality, and how these develop over time. In line with dynamic usage-based assumptions, this study focuses on three aspects of L2 development: 1) the interaction of different subsystems and the interaction of the developing L2 system and instruction, 2) variability patterns in the developing L2, and 3) the abstractness of L2 constructions. These different aspects are studied and the results reported in four research articles and in this overview. The focus of the four substudies is shown in Figure 3.

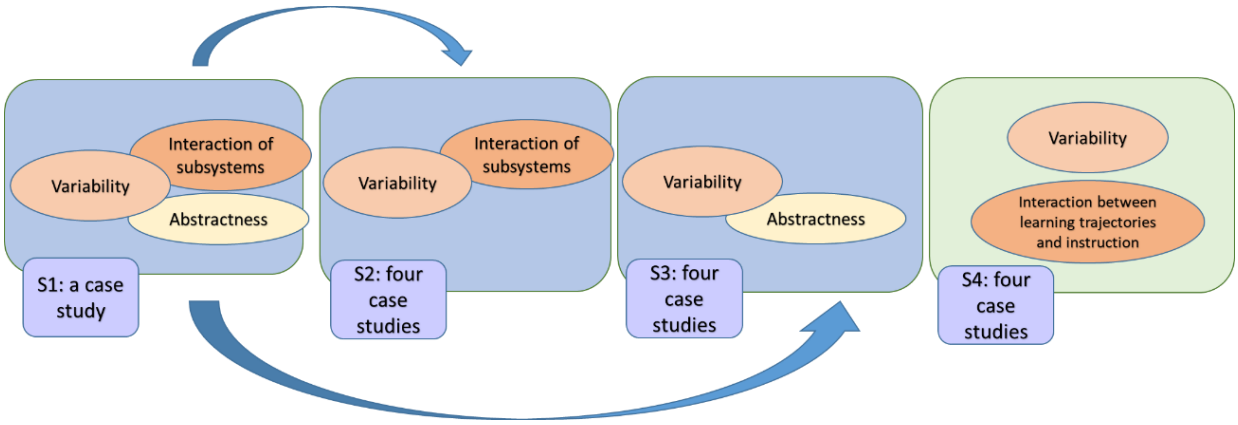

Figure 3 The focus of the four substudies

In Figure 3, different colors show the different meanings studied (evaluation or existentiality): blue stands for evaluation, and green for existentiality. Figure 3 also illustrates the research process. Substudy 1, a case study of one learner, was used to create hypotheses for Substudies 2 and 3. Substudy 4 studies a different meaning and brings a new point of view on the aspects of variability and interaction.

The context of this study is the L2 Finnish development of adult, beginner learners. More specifically, the focus is on four learners' development in expressing evaluation and existentiality over time. The research questions guiding this thesis are as follows:

1. What kinds of interactions can be observed between the subsystems, i.e., the different linguistic means, that are used to express the same meaning?
2. What kinds of variability patterns can be observed in different subsystems and in the different constructions that are used to express the same meaning?
3. How do L2 constructions develop over time in terms of lexical specificity and abstractness?
4. What kinds of interactions can be observed between the development of constructions and instruction?

The first area of interest, interaction, is studied at two levels (RQs 1 and 4). Substudies 1 and 2 report on the interactions found between two types of constructions that were used to express evaluation (RQ1), and Substudy 4 explores the interaction between instruction and the learners' trajectories in expressing existentiality (RQ4). The fourth research question is also briefly touched upon in Substudy 2, which examines the development of evaluative constructions. The second matter of interest, variability, is an overarching theme: it is approached from different angles in all four substudies. In Substudies 1 and 2, variability is investigated from the point of view of different subsystems (RQ2). The third subject of interest, the abstractness of constructions, is the subject of Substudy 3, and in that study, variability is used to operationalize the abstractness of two constructions used to express evaluation, namely the *haluta* 'want' and *tykätä* 'like' constructions (RQ3).

Substudy 4 investigates the variability in expressions of existentiality (RQ2). The topics of the four substudies and the research questions they answer are presented in Table 1.

Table 1 Topics of the four substudies

Substudy	RQ	Topic
1	1, 2	Interaction and variability in one learner's expressions of evaluation: A case study
2	1, 2, (4)	Interaction and variability in four learners' expressions of evaluation
3	3	Variability as a sign of abstractness: How the four learners' production of two evaluative constructions develops
4	2, 4	Variability and the effect of instruction in four learners: Developing the Finnish existential construction

The theoretical background as well as some basic features of Finnish and how it is learned as a second language are presented in Sections 2 and 3. The data and methods are described in Section 4. Section 5 presents the findings with regard to research questions 1 – 4 as well as the findings of the four substudies. The findings are then discussed in Section 6. The original articles can be found after the reference list and appendices.

2 L2 DEVELOPMENT FROM A DYNAMIC USAGE-BASED PERSPECTIVE

This section presents the theoretical framework of this study, namely the dynamic usage-based perspective which is a combination of Complex Dynamic Systems Theory (CDST) and Usage-Based Linguistics (UBL). It will first provide an introduction to this theoretical framework, and after that, in Sections 2.2 and 2.3, the two theoretical frameworks (CDST and UBL) are described in more detail. These two sections focus on the key issues of this study: interaction and variability patterns in the developing L2, as well as the development of abstractness in L2 constructions.

2.1 Dynamic usage-based perspective

If one is asked to think about the concept of learning to ride a bicycle, one probably visualizes a child trying to find his or her balance on the bike. If one is asked to think about learning a language, what does one think? Maybe a child saying *mom* for the first time, maybe a tourist reading a menu written in a foreign language, or maybe a class of students studying a new language at school. In all of these cases, one visualizes a learner. It is very hard to think about learning without thinking about the learner. This crucial question about the relationship between the learner and learning was raised by Diane Larsen-Freeman and Lynne Cameron in 2008 in their book *Complex Systems and Applied Linguistics*:

> But is it truly possible to separate the learner from learning, or is it the case that each individual achieves the success that he or she does in a unique way?[2]

The point of learning and learner being inseparable might seem obvious, but surprisingly often language learning is indeed separated from the language learner. Larsen-Freeman and Cameron continue:

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2 Larsen-Freeman & Cameron 2008: 10

> … interlanguage studies often tend to be cross-sectional, denying us a portrait of individual growth and variability.[3]

In cross-sectional studies on language learning, a group of learners is divided into subgroups based on their language proficiency. For example, beginner learners and proficient learners form their own subgroups and a certain aspect of the language of these two groups is compared. This kind of approach can give us valuable insights into different features characterizing beginner learners' and more advanced learners' language. For example, it has been shown that advanced L2 Finnish learners use the passive and a transitive construction more than beginner learners do (passive: Seilonen 2013; transitive construction: Reiman 2011b). However, generalizing findings from group studies to individual learners is not unproblematic (Lowie & Verspoor 2018). Based on cross-sectional data it seems safe to assume, for example, that the use of the passive increases in an individual learner's production as their skills develop and their proficiency increases; but when and how this happens remains open if a longitudinal, case-study, time-series approach is not applied (see e.g. Molenaar 2015; Lowie & Verspoor 2018).

Describing the learning process - inseparable from the learner - is an important aim of longitudinal studies such as the current study. A dynamic usage-based approach to language learning provides a fruitful theoretical framework for this. This approach is a combination of two theoretical approaches: complex dynamic systems theory (CDST, see Section 2.3) and usage-based linguistics (UBL, see Section 2.2) (for a dynamic usage-based perspective see e.g. Langacker 2009; Verspoor & Behrens 2011; Verspoor, Schmid & Xu 2012; Roehr-Brackin 2015). What is common to these approaches is that they see language learning as a process in which changes emerge from language use. In both CDST and UBL, learner language constructions, i.e. form-meaning mappings, are seen to form a network: they are all connected to each other. When the learner uses an expression for the purpose of interaction, this expression is (subconsciously) set against other expressions in the network. In language learning, the whole network of expressions changes; sometimes the changes are gradual, sometimes sudden. A dynamic usage-based approach is concerned with these changes: how the learner language changes as a result of 1) its interaction with the target language environment (the learner using the language in social interaction) and 2) the interactions of its parts with each other (the interaction of constructions in the network). (Goldberg 2006; Behrens & Verspoor 2011; Langacker 2013; Roehr-Brackin 2015.) CDST and UBL have therefore fundamental similarities in terms of how language learning is viewed.

Despite the similarities between the two theoretical approaches, they have different roots and they approach language development from different angles. CDST is in fact not a theory of language or language learning but of change (Larsen-Freeman & Cameron 2008) and it – as well as related theories such as complexity theory or chaos theory – has been used in various fields, including mathematics (Thom 1983), physics (e.g. Gell-Mann 1994), chemistry (e.g. Prigogine & Stengers 1984), biology (e.g. Maturana & Varela 1972; von Bertalanffy 1950), meteorology

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3 Larsen-Freeman & Cameron 2008: 245

(Lorenz 1972), psychology (Spivey 2007), and many others (for a summary, see Larsen-Freeman & Cameron 2008: 2–5). For this reason, the phenomena studied and the terms used in CDST are not directly related to language or its learning. The usage-based perspective, on the other hand, has a purely linguistic basis: a number of linguistic approaches adopt the view that linguistic knowledge can be represented as an inventory of constructions of different lengths and different levels of abstractness (Barlow & Kemmer 2000; Eskildsen & Cadierno 2015). For this reason, the emphases of these two theories are a little different.

Also in the context of this study, these two approaches have different emphases and the relative weight of CDST and UBL is therefore a bit different. As a more general theoretical framework, CDST is seen as the primary theoretical approach of this study. As described above, CDST is a theory of change and in the context of second language developmental studies, language learning is viewed as a process in which changes continually take place. This study concerns patterns of changes in the four L2 Finnish learners' expressions of evaluation and existentiality, and CDST is an appropriate framework to study these changes. However, one specific change that is under investigation in this study is the development of abstractness in L2 constructions. This issue is investigated with research question 3, and here, UBL approach is seen as the primary framework. The main characteristics of both theories are described in Sections 2.2 (UBL) and 2.3 (CDST).

2.2 Usage-based approaches to L2 development

2.2.1 Constructions as units of language use

Languages are used and learned for the purpose of interaction. When we express meanings with language, we use conventionalized symbolic units: form-meaning mappings, i.e., constructions. Constructions consist of two poles: the meaning pole, also called the semantic pole, and the form pole, also called the phonological pole (including orthographic representation[4]) (see Figure 4). Each pole can evoke the other. (see e.g. Goldberg 1995, 2003, 2006; Langacker 2013.) For example, the sentence *Suomessa on paljon järviä* 'There are many lakes in Finland' possibly evokes the meaning of a country in the north with many inland waterways. In other words, the form pole, or phonological pole, evokes the meaning pole, or semantic pole. If a speaker wants to express this meaning him or herself, he or she starts from the semantic pole and searches for a good way of expressing the meaning; that is to say, the speaker needs to find the phonological pole of the construction. The symbolic nature of constructions lies in the link between the two poles (Langacker 2013: 161).

[4] Langacker (2013: 15) includes the orthographic representation and gestures under this phonological structure.

Suomessa on paljon järviä
There are many lakes in Finland

Meaning
Semantic pole

Form
Phonological pole

Figure 4 Association between the semantic and the phonological poles in an existential construction (*there is/there are* construction)[5]

In usage-based approaches, the language system is seen as a structured inventory of constructions (Langacker 1987: 63-66), which are of different sizes and at different levels of abstractness (Goldberg 2006). The size of a construction varies from a morpheme made up of just one phoneme to complex sentences. The level of abstractness extends from fully lexically specific items, such as words or idioms, to fully abstract patterns, such as the passive construction. (Langacker 1987, 1999; Goldberg 2006.) A common characteristic of these constructions is that a certain aspect of their meaning or form is not strictly predictable from its components (Goldberg 2006). For example, the meaning of the Finnish possessive construction *Minulla on työpaikka* 'I have a job' (see Example 3) cannot be predicted from its parts: the pronoun *minä* 'I', the marker of the adessive case *-lla*, the third person singular form of the verb *olla* 'be', and the compound noun phrase *työpaikka* 'job' (see Appendix 1 for glossing). The meaning of this expression therefore lies in the ensemble of the parts.

[5] Map © OpenStreetMap contributors, map data available under the Open Database License (www.opendatacommons.org/licenses/odbl) from www.openstreetmap.org

(3) *Minu-lla* *on* *työpaikka.*
I-ADE be(3SG) work.place
'I have a job'

An example of the predictability of the form from the components of the construction could be the Finnish existential construction (Example 4). The predicate *on* is the non-predictable component within this construction. In standard Finnish there is normally congruence between subject and verb. Therefore, because the subject is in the plural form, the assumed form for the verb *olla* 'to be' would be the third person plural *ovat*. The Finnish existential sentence can be categorized as a construction because one part of its form cannot be predicted from another part. However, as pointed out by Goldberg (Goldberg 2006: 6), even fully predictable patterns may be stored as constructions if they are used frequently.

(4) *Suome-ssa* *on* *paljon* *järv-i-ä.*
Finland-INE be(3SG) many lake-PL-PART
'There are many lakes in Finland.'

Constructions at all levels are symbolic, meaning that even fully abstract constructions carry meanings. In other words, when constructions are seen as units of language use, the lexicon and grammar are not separated from each other: also the grammar is meaningful. (e.g. Langacker 1987; Ellis 2003; Goldberg 2003, 2006.) This symbolic nature of grammar can be demonstrated when an intransitive verb is used within a transitive construction, as in *He laughed me the paper*. Even though the verb *laugh* is an intransitive verb, the meaning of the construction is transitive. Therefore, constructions as grammatical patterns carry meanings. The fact that specific lexical items and fully abstract grammatical constructions are not seen as separate, but as occupying different ends of the same continuum, is crucial to the approaches that view language learning as usage-based. According to these views, language learning is not seen as learning words and stringing them together according to grammar rules, but as learning constructions at different levels of abstraction. (E.g. Barlow & Kemmer 2000; Dąbrowska 2001; Tomasello 2003; Eskildsen & Cadierno 2015.)

One important characteristic of a construction is its nature as a conventionalized, frequently occurring unit (Goldberg 2006). Learner language constructions are problematic in this respect: they are often unconventional, and they are often transient (see Waara 2004). For example, when expressing liking with the verb *tykätä* 'like', the learner may not use the required elative case ending in the noun phrase, like in Example 5. Even though this construction is unconventional and infrequently encountered, we understand the meaning the learner is trying to convey. If the learner language construction sufficiently resembles the conventionalized construction (see Example 6), the link can be made between the form and the function.

(5) *Tykkää-n* *enemmän* **talvi*[6]
Like-1SG more *winter
'I like winter more'

(6) *Tykkää-n* *enemmän* *talve-sta*
Like-1SG more winter-ELAT
'I like winter more'

In this study, the definition of a construction as a conventionalized, frequently occurring pairing of form and meaning (Goldberg 2006) has been broadened to include learner language constructions that might not yet seem conventional from the point of view of a proficient speaker. The definition of learner construction given by Waara (2004) is that it is a form-meaning mapping that is used in a somewhat unconventional manner. The use of this unconventional construction does not cause a breakdown in communication (the link between form and function remains clear), but it still deviates in some way from conventional use.

2.2.2 Domain-general cognitive skills and processes in language learning

In usage-based approaches, language learning is seen as the learning of constructions. One key aspect of this process is learning to associate the semantic and phonological poles of constructions with each other and using them in a target-like way. (Dąbrowska 2001; Tomasello 2003; Langacker 2009.) This mechanism of association is not specific to language use: we make associations also outside of language (Langacker 1999: 2). For example, the concept of snow is associated with the concept of winter. In other words, association is a domain-general skill. In usage-based views on language learning, language development is seen to be based on the use of several domain-general skills, i.e., skills that are applicable to any domain of experience (see Langacker 1999, 2013).

One crucial domain-general skill for learning a language is the ability to find patterns, which enables us to recognize patterns in perceptual input (Tomasello 2003; Evans & Green 2006: 137). For example, in Figure 5, we are able to conclude whether the next shape in the sequence should be a square or a circle.

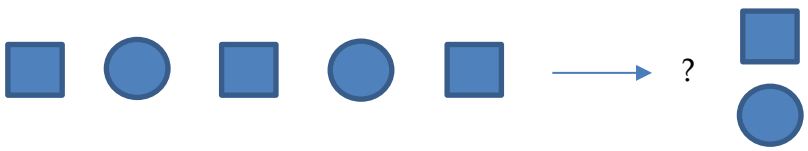


Figure 5 Example of a detectable pattern

[6] This construction was used by one participant in this study, Lena

Similarly, we can detect patterns and perform 'statistical' analysis over the auditory stream of language (Tomasello 2003; Evans & Green 2006: 137). By using an artificial language, it has been shown that small children are able to recognize patterns of syllables that have been repeatedly used in the input (Saffran, Aslin & Newport 1996). However, pattern recognition alone is not enough in learning a language. In order to make the association between the meaning and the form, it is necessary to understand other people's communicative intentions. Without this skill, the symbolic nature of the patterns would not become expressed. (Tomasello 2003.) The fact that the circle is the next shape in the sequence of shapes in Figure 5 does not carry any meaning because these patterns do not have a symbolic nature.

Categorization is a sub-type of the skill of pattern finding because categories are established on the basis of patterns of features. Categorization is an important aspect of language learning. It is also a domain-general mechanism: we also categorize real-world concepts (Tomasello 2003; Langacker 2013.) For example, a plate can be categorized as a dish when its characteristics are compared with the characteristics of other dishes and other items at home. In the categorization process, the physical and functional similarities and differences of a new concept are compared to those of already known concepts (Langacker 2013: 17). A plate can be categorized as a dish because dishes are around the same size, they are made of similar kinds of material, and they are all used when eating. A plate is not categorized as a tool because it is not used for fixing other items. Similarly, in language learning, a novel expression is set against expressions that are already known. For example, if the learner is familiar with the expressions *Haluan matkustaa* 'I want to travel' and *Haluan syödä* 'I want to eat', it is possible for him or her to notice that in a new expression *Haluan lukea* 'I want to read', *lukea* 'to read' also denotes a desired action. It can therefore be categorized in the same group of words as *matkustaa* 'travel' and *syödä* 'eat'. This is possible because all three expressions have functionally and formally a similar component, *haluan,* - denoting one's desire - and a functionally variable but partly formally similar component, *matkustaa*, *syödä*, and *lukea* (verb stem + A)[7] - denoting the desired action. (for categorization, see Langacker 2013: 17–18.)

Schematization, which is used in this work to refer to the development of abstractness, means the formation of abstract knowledge. With this skill, language learners are able to generalize lexically specific items (see e.g. Langacker 1999: 93, 2013: 17; Goldberg 2006: 69–92). Schematization is based on pattern-finding ability (Evans & Green 2006: 137) and it also takes place outside of the area of language development (Langacker 2013: 17). For example, when someone is learning to drive a car and is leaving the yard of the driving school for the first time, they learn that they need to give way to the cars driving along the road they are planning to join. This piece of knowledge might first be applied only in the yard of the driving school. Quite soon, they learn that whenever they leave any yard, they need to give way to other cars on the road, and, when they themselves are driving along the road, they will realize that the cars entering the road from yards will give way to them. They

[7] Infinitives end with either -a or -ä (Karlsson & Chesterman 1999: 56 – 57), which is marked 'A'.

have developed generalizable knowledge about a traffic regulation because they have been able to generalize over many specific junctions. A similar kind of mechanism is applied in language learning when the learner moves gradually from lexically specific items toward more abstract patterns (Dąbrowska 2001; Tomasello 2000, 2003; Eskildsen 2009; Langacker 2009). This process is one of the main areas of interest of this study (RQ3) and it is described in detail in Section 2.1.3.

Entrenchment is another domain-general process important in language learning. It refers to the process of automatization. For example, when children first learn to tie their shoelaces, the process consists of different phases. They know that first they need to cross the two shoelaces, then bring one of them under the other, and then pull tight. When they have done this action repeatedly, they do not need to think about the different phases anymore, but the activity has become one unit. Similarly in L2 learning, first, the learner may need to pay attention to the individual components of the construction, but as this construction is used repeatedly and the memory trace is activated frequently, it becomes established as a unit (see Langacker 2013: 16–17). These kinds of units can be easily accessed and activated when necessary (Langacker 1999: 93).

A usage-based view is in stark contrast to more formal views, especially the nativist perspective (see e.g. Evans & Green 2006: 140). According to the nativist view, language learning is largely independent of other types of learning and cognitive processing. The capacity to learn language is presented as a separate module in our brain. In other words, domain-general skills do not guide language learning, but we have a module that is specifically tuned for language learning. This module is unique to human beings, and it is an innate, genetically coded component in our brain. This special component is what Chomsky has referred to as universal grammar. It contains the possible structures of all languages and based on the linguistic input of the target-language-speaking environment, a child learns words that can then be strung together according to the principles coded in the language learning module. Because the universal grammar contains the principles of all languages, the child needs to adapt the grammar for the purposes of his or her language (for Universal Grammar and the nativist perspective, see Chomsky 1971, 1979, 1981, 1986.) Universal grammar was first presented as a prerequisite for L1 acquisition, but different versions of the theory have also been proposed to apply to L2 development. The nativist perspective on language learning was influential in both L1 and L2 learning research in the 1960s and 1970s, but recently many language learning researchers have adopted more usage-based views on language development (Evans & Green 2006: 141). In these views, language is seen to emerge from language use, and the general cognitive skills mentioned in this section are seen as central in this process. This study adopts the usage-based view of language learning, and the usage-based learning path will be presented in the following section.

2.2.3 The usage-based learning path: developing abstract L2 constructions

According to usage-based approaches, learners develop their communicative competence, i.e., their ability to express meanings with constructions, by using the language in different kinds of usage events (e.g. Barlow & Kemmer 2000). Using the general cognitive skills mentioned in the previous section makes it possible for learners to develop their own language system: a structured inventory of constructions, those form-meaning mapping units (Langacker 1999). According to usage-based approaches, use, then, is the key to the emergence of learner language: abstract, general patterns of the L2 are derived from usage events (Langacker 1999: 99; Barlow & Kemmer 2000; Tyler 2010: 271). This process is one of the main focuses of this study and it is therefore described in some detail in this section.

The usage-based approach assumes that learners' initial constructions are tied to specific usage events, in other words, to events where the learner actively participates in communication, whether in language production or reception (see e.g. Langacker 1999: 99; Barlow & Kemmer 2000). The initial constructions that a learner uses are similar to each other. They are used for the same purposes of interaction and therefore they show very little variability in form (e.g. Dąbrowska 2001; Tomasello 2003; Dąbrowska & Lieven 2005; Mellow 2006; Eskildsen 2009, 2012, 2018; Roehr-Brackin 2014). For example, the learner might repeat the utterance *Haluan matkustaa Saksaan* 'I want to travel to Germany' several times in different usage events. It is assumed that initially the constructions that language learners use are un-analyzed chunks. L1 learners produce utterances, such as *gimme milk*, without knowing that the construction consists of different parts with different functions (give + me + milk). The utterance is a whole, a single unit, for the child. (Dąbrowska 2001; Tomasello 2000, 2003.) L2 learners, on the other hand, might have some inkling of the different parts of the construction, even though very similar utterances are repeated. In other words, frequently occurring constructions are not necessarily rote-learned, un-analyzed units, but the learner might have formed them from their parts. In this kind of situation, the learner uses a creative construction in which different parts are fused together. This construction is then stored and reproduced from memory (Schmidt & Frota 1986: 310). For example, the imaginary L2 learner's expression *Haluan matkustaa Saksaan* 'I want to travel to Germany' may be an un-analyzed whole for the L2 learner, just like *gimme milk* is for the L1 learner, or it may be formed from different parts (e.g. *Haluan* + *matkustaa* + *Saksaan* 'I want to + travel + to Germany') that are put together and then memorized. However, when using production data it is impossible to know for sure whether the construction is analyzed, under-analyzed or not analyzed at all, and interpretations on this subject can only be speculative. Nevertheless, in usage-based approaches it is assumed that both L1 and L2 development generally begin with the use of un-analyzed constructions.

Over time, as the learner is exposed to the language more and more and uses it in different usage events, he or she starts to (subconsciously) compare the constructions he/she encounters with each other, using pattern-finding and categorization skills. Gradually, abstractness develops. In this process, the learner notices that constructions consist of different parts with different functions and that

these parts can be varied to express different meanings. This is the schematization process, in which lexically specific constructions become more abstract and productive. The process of schematization of the pattern *haluta* 'want'+ NFC (non-finite clause) is visualized in Figure 6. (See e.g. Peters 1983; Tomasello 2000, 2003; Langacker 1999; Goldberg 2006; Eskildsen 2009.)

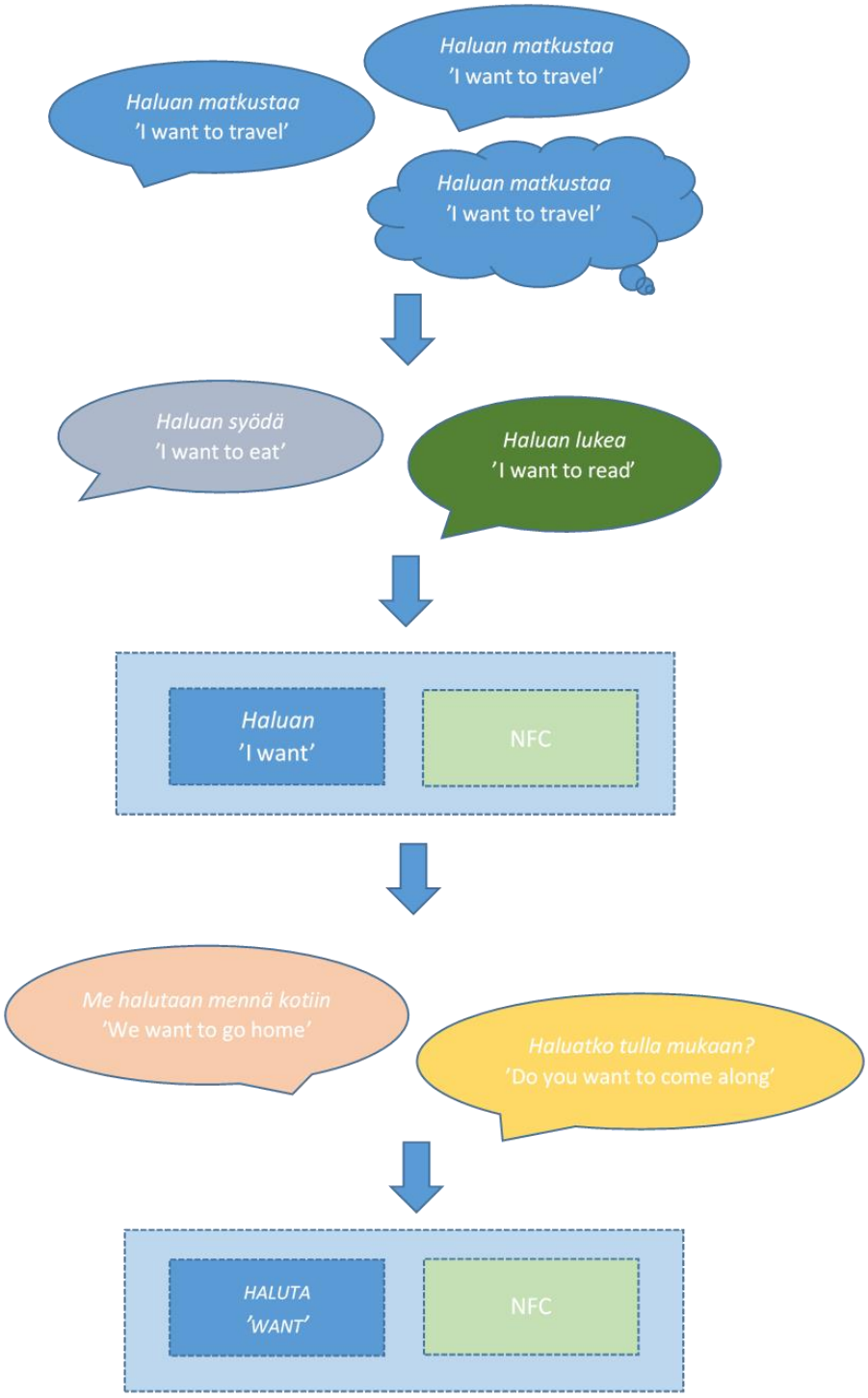


Figure 6 A usage-based learning path

As shown in Figure 6, the first step in the usage-based learning path is when the learner uses a fixed construction displaying no variability in form (e.g. *Haluan matkustaa* 'I want to travel'). These constructions are called lexically specific items (see Dąbrowska & Lieven 2005) and they can be produced by the learner (the speech bubbles), or they can be used receptively (the thought bubble) (see Langacker 1999: 99). Later on, when the learner encounters the verb *haluan* 'I want' in different usage events with other verbal complements, in expressions such as *haluan syödä* 'I want to eat', and *haluan lukea* 'I want to read', the learner is able to develop the pattern *haluan* + NFC 'I want + NFC' (the box in the middle in Figure 6). Forming this pattern is possible because the constructions encountered all express one's desire for different actions and they all show the same form, *haluan* 'I want'+ verb stem + A. To form this pattern, the learner uses the skills of association and categorization (see e.g. Langacker 2013). These patterns are called semi-schematic, semi-abstract patterns, because they are not entirely abstract: besides the open, variable slot (a slot for the NFC), there are fixed parts within the construction (in this case the verb *haluan* 'I want') (see Eskildsen 2009). Over time, the pattern may develop towards a more abstract pattern. For example, the learner is able to conjugate the verb *haluta* 'want' to express other than his or her own desires. Finally, the learner may develop a fully abstract schema of the construction, in other words, the construction becomes schematized (the bottom box in Figure 6). In sum, in the process of schematization, the learner generalizes over the specific lexical items to form a more abstract pattern (see e.g. Langacker 1999; Goldberg 2006). Because this kind of learning path is based on the initial use of lexically specific items, it is often referred to as item-based learning (Tomasello 2000).

Whether L2 learners actually develop fully abstract schemas is not entirely clear. There is some empirical evidence of L2 learners developing fully abstract knowledge (Eskildsen & Cadierno 2007), but the development of fully abstract representations in L2 learning has also been questioned (see e.g. Eskildsen 2009). As linguistic development is seen to be an ongoing process without an actual endpoint (see e.g. Hopper 1998), also the L2 as a dynamic system is constantly changing, and L2 learners' linguistic knowledge is never fully developed (Larsen-Freeman & Cameron 2008). There is also empirical evidence that some L2 constructions do not lend themselves easily to abstraction: Eskildsen (2009) has shown that an L2 learner's linguistic inventory consists of interrelated semi-schematic, semi-fixed constructions.

Whether the learner develops a lexically specific or an abstract construction, and how fast this happens, depend on the token and type frequencies of the constructions in the learner's language environment. A construction is likely to be stored as a formulaic, lexically specific expression if its token frequency[8] is high and its type frequency[9] is low, i.e., it is repeated frequently in the same form. (Bybee & Slobin 1982; Bybee 1995; Tomasello 2003: 107; Ellis 2005: 336; Eskildsen 2009: 336; Evans & Green 2006: 118). For example, if in a classroom activity the learners need to

[8] Token frequency is the number of occurrences of a certain expression in a certain context, e.g. how many times the verb *tykätä* 'like' is used within a text (see Bybee and Thompson 1997)

[9] Type frequency counts how many different realizations there are of a certain construction, e.g. how many different forms of the verb *tykätä* 'like' are used (see Bybee and Thompson 1997)

ask all their classmates the same question, *Mihin haluaisit matkustaa?* 'Where would you like to travel?', it could be assumed on the basis of the assumptions on the role of token and type frequencies that this construction will be stored holistically as a fixed expression. If different kinds of constructions are presented (e.g. *Missä haluaisit asua?* 'Where would you like to live?', *Haluatko mennä syömään?* 'Do you want to go to eat?'), it could be assumed that the learner has formed an abstract construction, because categorization and schematization can only happen if different kinds of constructions (with some similarities) are encountered.

The usage-based learning path, along which learners move gradually from rote-learned, lexically specific formulas, such as *Haluan matkustaa Saksaan* 'I want to travel to Germany', via semi-schematic, semi abstract patterns such as *haluan* + NFC 'I want + NFC', toward a more productive, abstract pattern such as HALUTA + NFC 'WANT + NFC' (and possibly a fully abstract pattern V + NFC) has been empirically established in many L1 acquisition studies (MacWhinney 1975; Tomasello 1992, 2003; Dąbrowska 2001; Dąbrowska & Lieven 2005; Lieven, Salomo & Tomasello 2009). It has also been proposed as a "default" guideline (Ellis 2002: 170) for investigating L2 development, and many empirical studies have shown that L2 learners follow this kind of learning path. Eskildsen shows in several studies based on longitudinal L2 English-learning data how some constructions develop from lexically specific items into more abstract patterns. For example, one learner's target-like negation pattern developed from the multiword, fixed expression *I don't know* into a more schematic pattern (Eskildsen 2012). Another learner's abstract *can* construction developed from the lexically specific multiword expression *I can write* (Eskildsen 2009). Eskildsen (2018) also shows that one learner initially used very few conjunctions in subordination and coordination, supporting the idea of item-based learning. Mellow (2006) showed with his longitudinal data collected with an L2 English learner that the development of embedded clauses was item-based. Some cross-sectional data imply the same kind of development. Roos and Lenzig (2018) suggest that the use of formulaic sequences decreases over time and accounts for a smaller part of a speaker's utterances as the level of proficiency increases. The findings of these studies support the idea that L2 learning is item-based, in other words, that L2 learners' constructions develop from fixed, lexically specific expressions into more abstract patterns.

In sum, there is empirical evidence that L2 development is based on the acquisition of items, similarly to L1 learning. It has therefore been assumed that an item-based learning path is to be expected also in L2 learners' language. However, since L2 learners and their learning environments differ crucially from L1 learners and their learning environments, we should ask whether it is probable that the learning mechanisms of these two groups are in fact alike. Although L1 learners are not studied in the current study, some differences between L1 and L2 learners are discussed here in order to evaluate the validity of the assumption.

One important difference between L1 and L2 learners is that L2 learners already have a lot of world knowledge while L1 learners are at the same time learning both different kinds of concepts and the language that is used to refer to them. In other words, the main challenge for L2 learners is to learn to make associations between

meaning and the target-language form, while for children, the meanings themselves are also new (e.g. Tomasello 2000). In addition, L2 learners can use their L1 when forming L2 expressions. These so-called transfer effects have been widely studied (see e.g. Odlin 1989; Gass & Selinker 1992; Cenoz, Hufeisen & Jessner 2003; Cook 2003; Cadierno 2004; Kaivapalu 2005; Jarvis & Pavlenko 2008). One example of making use of one's L1 is given by Smiskova-Gustafsson (2013) in her study of the development of conventionalized ways of saying things. Smiskova-Gustafsson argues that adult L2 learners may not map a beyond-word-level concept directly onto a conventionalized L2 expression: L2 learners do not treat these concepts holistically but they split them into parts and use their L1 when forming the L2 expression. With her data, Smiskova-Gustafsson (2013: 123–124) shows that her Dutch L2 English learners do not treat the meaning DEPOSITING MONEY holistically. The English expression *to put money in the bank* is often expressed with the L2 English pattern *put NP on DET bank* because the Dutch equivalent is similar to that: *zet NP op de bank*. Smiskova-Gustafsson (2013: 123–124) argues that the learners first break the meaning DEPOSITING MONEY into meaning units (process, thing, location), then look for linguistic solutions for them, and then merge these parts together using the schema that is alike in both languages. With regard to the existing L1 system, Cadierno (2012), using data in L2 Spanish learners, discusses the effect of the specific verbalization orientation of their L1 on L2 learners' "thinking for speaking" (TFS) (Slobin 1996) patterns. Cadierno (2012) points out that some aspects of the L2 TFS patterns for expressing the manner of motion were adopted by L2 Spanish learners. However, some aspects of the expression of motion events reflected the influence of the speakers' L1 TFS pattern. For example, some learners produced more complex and elaborate path descriptions than L1 Spanish speakers. (See Cadierno 2004; Cadierno & Ruiz 2006.) In short, because of the L2 learners' existing L1 system, the L2 and its development may show different features of the L1 system and L1 acquisition.

Another difference between L1 and L2 learners is that many L2 learners are learning the L2 in an instructional setting, which creates a different kind of learning environment from naturalistic language learning. As far as the process of schematization is concerned, Roehr-Brackin (2014) argued that a single adult learner receiving instruction in L2 German developed a schema of the *gehen* 'go' construction faster than the schema of the *fahren* 'drive' construction because of the learner's explicit knowledge of the *gehen* 'go' construction. Besides the possible development of explicit knowledge, instruction may play a role in how much the learner notices about the target language: as a consequence of instruction, learners may more easily notice the open slots within constructions, which in turn may speed up the formulation of schema (on noticing, see Ellis 2005: 324). Also the token and type frequencies in classroom interactions - and in input in general - are seen as important factors affecting L2 development, more precisely, schematization (Bybee 1995; Bybee & Slobin 1982; Tomasello 2003: 197; Ellis 2005: 336; Evans & Green 2006: 118; Eskildsen 2009: 336). The role of instruction in L2 development is studied with the fourth research question of this study (Substudy 4), and it is also touched upon in the other substudies.

As discussed above, L2 learners and their learning environments differ from L1 learners and their learning environments at least in terms of existing world knowledge, the developed L1 system, and the instruction. Therefore, it is not very surprising that there are differences in the learning processes, more specifically, in the process of schematization. There is some, still scarce, empirical evidence that L2 learners develop abstract schemas relatively quickly without following the assumed item-based learning path. L2 learners sometimes seem to skip the phase of exclusive use of lexically specific constructions. In the example cited above, Roehr-Brackin (2014) showed that an L2 German learner's *gehen* 'go' construction was abstract right from the start while the *fahren* 'drive' construction was tied to a specific lexical item. Eskildsen (2012) showed that an L2 English learner had both abstract and lexically specific constructions in his initial repertoire: non-target-like negation forms were more productive than target-like forms, which were predominantly item-based. In another study, Eskildsen (2015) showed that one L2 English learner's declarative copula questions were more productive than their interrogative copula questions. In addition, some cross-sectional data have supported the view that L2 learners start with abstract schemas. Arndt-Lappe and Baldus (2018) suggested that learners with lower language proficiency overgeneralized the patterns under investigation (*to*-infinitival complements and the penultimate stress in complex words in English), forming a general schema first which was later specified. The possibility of this kind of learning path was also pointed out by Langacker (2009), who suggested that (in L1 acquisition) an abstract schema can be formed even if "no specific lexical item is repeated" and stored as a unit (Langacker 2009: 633). Langacker argued that an abstract pattern such as a verb and object with a directional can be developed by encountering expressions such as *throw it away*, *pick it up*, and *put it down*, without learning any of these expressions individually.

To summarize this section, according to usage-based ideas, L2 learners use general cognitive skills to develop their linguistic system, which is a structured inventory of constructions. This development takes place in and for the purposes of interaction. In the process of schematization, learners generalize from lexically specific items and form abstract constructions. This is a bottom-up process: the generalities of the target language are derived from individual cases. The evidence for how schematization in L2 development takes place is still inconclusive: there is empirical evidence supporting the item-based learning path, but contrary results have also been found. This inconclusive issue has motived the third research question of this study: How do L2 constructions develop over time in terms of lexical specificity and abstractness? The following section describes the theoretical motivation for the first and second research questions of this study by presenting the theoretical framework of complex dynamic systems.

2.3 Learner language as a dynamic system

2.3.1 Interacting subsystems in the developing L2

In recent years, researchers have increasingly come to view learner language as a complex, dynamic system (e.g. de Bot, Verspoor & Lowie 2005; Larsen-Freeman 2007; van Geert & Verspoor 2015). Systems consist of parts that work together as a whole: a system's function is greater than the sum of the functions of its parts. The different parts or components of a system - subsystems - are connected to all other subsystems within the system. In complex systems, changes are seen to emerge from the interaction of these subsystems, and open systems are also interacting with their environment, which means that energy flows to the system from outside, triggering changes in the system. This is why open systems - such as languages - are dynamic and thus change over time. (see e.g. Larsen-Freeman 1997; de Bot, Verspoor & Lowie 2005; Larsen-Freeman 2007; Larsen-Freeman & Cameron 2008; Lowie & Verspoor 2015; van Geert & Verspoor 2015; Lowie, van Dijk, Chan & Verspoor 2017).

If we see learner language as a complex, dynamic system, we can consider for example the lexical system, phonological system, and syntactical system to be different subsystems that are continuously affecting each other (de Bot & Larsen-Freeman 2011: 10; van Geert & Verspoor 2015: 539). Similarly, complexity, accuracy, and fluency (CAF) in L2 do not develop independently from each other but they always interact (see e.g. Housen, Kuiken & Vedder 2012). For example, complexity, which indicates elaborate and varied language (Ellis 2003: 340), may sometimes affect the accuracy, which indicates error-free language (Housen & Kuiken 2009), or the fluency - the processing of the L2 with 'native-like rapidity' (Lennon 1990: 390) - of the language produced by an L2 learner. These subsystems - linguistic aspects such as the lexical and phonological systems or the CAF measures - interact with the learner's internal resources (e.g. aptitude and motivation) and with external resources (e.g. the target language community and instruction) (see van Geert 1991: 5-6; van Geert & Verspoor 2015: 540; Lowie, van Dijk, Chan & Verspoor 2017: 132-133). Figure 7 shows how the subsystems of complexity, accuracy, and fluency are connected to each other and to one external resource, instruction. Because subsystems are connected and embedded in other systems, a change in one component has the potential to cause a change in other components in the system (see e.g. Caspi 2010; Tilma 2014; Lowie & Verspoor 2015). If any element in Figure 7 moves, all the other elements move as well. This property of a dynamic system is called complete interconnectedness (de Bot, Verspoor & Lowie 2005: 117). However, it should be noted that the connections between the different aspects are not all equally strong (see Larsen-Freeman 2007: 36).

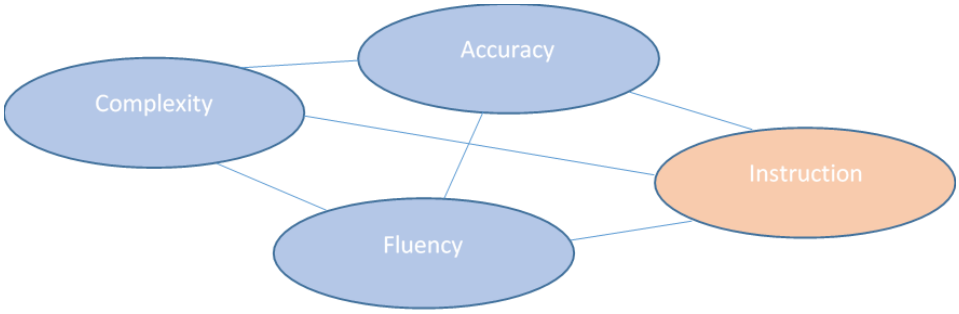


Figure 7 Complete interconnectedness of CAF measures and one external resource

In sum, the different subsystems of an L2 are connected and they interact with each other as the learner uses the L2 and it develops over time. Since the interaction between the different subsystems in the L2 and between the L2 system and its environment (instruction) is one of the main interests of this study (see the RQs), these interactions will now be looked at in more detail.

In the CDST framework, interactions between subsystems have often been categorized into three types (see Verspoor & van Dijk 2011: 86). In the first type of interaction – a supportive relationship - the different subsystems develop together because they support each other's growth. In this type of interaction, growth or progress in one subsystem means also growth in the others (van Geert 1991: 5; Larsen-Freeman 2007; Verspoor & van Dijk 2011: 86). For example, learning one new construction might help the learner to acquire another, similar construction at the same time, and the use of both constructions increases (for L1 acquistion see Abbot-Smith & Behrens 2006). Supportive interaction has been reported in several studies on L2 development. For example, for an adult L2 Finnish learner, it was shown that both word complexity and sentence complexity, and word complexity and noun phrase complexity, were in a supportive relationship with each other (Spoelman & Verspoor 2010: 547-548).

The second type of interaction is a conditional relationship, in which one subsystem has to reach a certain minimal level before another subsystem can develop. For example, in both L2 English (Caspi 2010: 166) and L2 Finnish (Martin, Mustonen, Reiman & Seilonen 2010; see also Lesonen 2013 for a summary of studies in the Topling and Cefling projects) it has been shown that complexity is a necessary precondition for accuracy.

The third type of interaction is competitive interaction. In this type of interaction, different aspects compete for the same resources and hence progress in one aspect is related to regress in another (van Geert 1991: 5, 21-23; Verspoor & van Dijk 2011: 86). A competitive relationship has been reported, for example, between noun phrase complexity and sentence complexity in L2 Finnish (Spoelman & Verspoor 2010: 548) and in L2 English (Verspoor, Lowie & van Dijk 2008: 225). L2 development being a dynamic process, it is also assumed that the interaction between the different subsystems may be asymmetric, meaning that the relationship between different aspects may change over time. Spoelman and Verspoor (2010: 545) show that for an advanced Finnish L2 learner, the correlation between complexity and accuracy fluctuates between positive and negative, indicating that their

relationship changes between supportive and competitive as the learner's skills develop.

Because all of the subsystems of the L2 are connected to each other and interact, and the L2 system is interacting with the target-language-speaking community, which in turn is embedded in other systems, such as the socio-political context, predicting the direction of changes in the L2 system is difficult (see Larsen-Freeman & Cameron 2008; Lowie & Verspoor 2015; van Geert & Verspoor 2015). For example, we might expect that the accuracy of a certain learner language construction will increase if the form of the construction is practiced and analyzed in the classroom: in other words, a linear effect between cause (instruction) and effect (higher accuracy) could intuitively be expected. However, since several other factors besides the instruction affect the developing L2 system and these factors affect each other, development might be nonlinear, which means that the size of the effect is not relative to the size of the cause (Larsen-Freeman 1997: 143, 147-148; de Bot & Larsen-Freeman 2011: 12). Instruction might, for example, positively affect the learner's motivation to participate in interaction outside of the classroom, which in turn leads to greater progress. Instruction might also help the learner to understand a previously incomprehensible text, which opens up new possibilities for further development. On the other hand, analyzing the structures of the target language might feel overwhelming and might discourage the learner, which then slows down the learning process, and so on. In short, the interconnectedness of systems and their subsystems makes predictions about the behavior of dynamic systems very difficult.

Another reason why the development of any dynamic system is unpredictable is that dynamic systems are dependent on their initial conditions (Larsen-Freeman 1997: 149-150; de Bot, Verspoor & Lowie 2005: 117). Even a little difference in the initial state of two learners might lead to big differences in their learning trajectories later on. It has been shown that even identical twins who shared very similar initial conditions and had similar exposure to the target language had individual learning trajectories (Chan, Verspoor & Vahtrick 2015).

Even if all of the variables playing a role in L2 development could be detected and controlled for, predicting the direction of changes in a complex, dynamic system such as the developing L2 is very difficult because one characteristic of these systems is their potential to self-organize (Thelen & Smith 1994: 54; de Bot, Verspoor & Lowie 2005: 117; de Bot, Lowie & Verspoor 2007: 8; van Geert & Verspoor 2015). A commonly used example of self-organization is the collapse of a pile of sand (see e.g. de Bot & Larsen-Freeman 2011: 13). A heap of sand on the beach may seem unchanging for a long period of time: it keeps its shape, regardless of the small internal changes taking place and the external forces, such as wind and rain, that affect it. Then, suddenly, one part of the heap collapses and the heap takes a new form: the structure of the pile of sand has self-organized. Because of the interaction of internal and external factors, it is impossible to say what caused the collapse and it would have been difficult to predict the time of the collapse. The same applies for language learning. Sometimes learners seem to put on a sudden spurt in their development even though the external forces have stayed constant. This is how L2 systems self-organize.

From the Complex Dynamic Systems Theory perspective, instruction - in whatever form - can be seen as an external resource that has the potential to bring in some energy from the outside and change the developing L2 system (see e.g. Larsen-Freeman 1997: 157; Larsen-Freeman & Cameron 2008: 197- 227; Nicolescu & Petrescu 2013). Potentially, it can also be the factor that initiates the learning process. However, as pointed out earlier, predicting the impact of instruction is a challenge because L2 development is a dynamic process. Moreover, as L2 learning is individually owned (e.g. Lowie, van Dijk, Chan & Verspoor 2017; Lowie & Verspoor 2019), it is impossible to predict what kind of impact instruction will have on individual learners. This individual response to instruction is related to the term affordance, which refers to the relationship between the (social) environment and the learner. The term affordance emphasizes the learner's active role in noticing and using the linguistic material as a resource for learning. (van Lier 2000.) Learners in the same classroom may get the same learning material but every learner uses this material in a unique way: the affordance is different for every individual. Therefore, instruction can have a widely different influence on individuals' trajectories.

The effect of instruction on L2 development has been studied widely (for an overview see e.g. Ellis 1994, Norris & Ortega 2000, Ellis 2002, Housen & Pierrard 2005, Spada & Tomita 2010). This effect has often been investigated in relation to the CAF measures, in other words, whether (a specific type of) instruction is beneficial for the development of complexity, accuracy, or fluency in L2. For example Tilma's (2014) case study shows that the L2 Finnish learner whose teaching emphasized form had initially higher scores in complexity and accuracy compared to the learner whose teaching emphasized meaning. However, these differences diminished over time (Tilma 2014: 182.) Piggott (2019: 169) shows that for several different accuracy measures, the group that had received explicit instruction on L2 English outperformed the group that had received implicit instruction. Moreover, Piggott (2019: 173) shows that a six week grammar course for the implicit group was beneficial in improving the learners' accuracy. It therefore seems that explicit focus on form can in some cases be useful for the development of accuracy and complexity. The advantages of explicit programs have also been shown to exist in a research synthesis and meta-analysis done by Norris and Ortega (2000) as they show that explicit types of instruction are more effective than implicit types. A similar kind of conclusion was made in Spada and Tomita's (2010) meta-analysis. However, contrary findings exist: it has been shown that a mainly implicit program can be better than explicit program in L2 development (Rousse-Malpat 2019). In sum, findings in this area are inconsistent and the benefits of an explicit focus on form in L2 teaching have also been questined repeatedly. For example, a functional L2 pedagogy approach does not see the analysis of grammar rules and forms of the language as an overriding aim in teaching but emphasizes the use of language instead (Aalto, Mustonen & Tukia 2009: 407). In the current study, the effect of instruction is investigated through the fourth research question, whose aim is to explore what kind of impact instruction has on the use and accuracy of the constructions that learners use to express existentiality.

Given the above-mentioned characteristics of a dynamic system – the interconnectedness of subsystems and systems and their interaction, the dependency on internal and external resources, the nonlinear development, and the dependency on initial conditions – it is no wonder that individuals develop neither in a similar manner to other individuals, nor steadily. When L2 development is studied from a dynamic perspective, a lot of inter- and intra-individual variability has been observed. Let us now turn to the role of variability in L2 development, which is another main interest of this study.

2.3.2 Variability in L2 development

Variability can be observed at several different levels. First, individuals differ in the ways their L2 develops. This is called inter-individual variability, also referred to as variation (see e.g. Lowie and Verspoor 2015). Second, within an individual, a certain variable may show variability over time: when a learner is acquiring something new, the use of this new item of language may show peaks and dips. This is referred to as intra-individual variability (Lowie & Verspoor 2015). Third, variability can be observed within a certain construction. If a construction is a lexically specific, rote-learned chunk, it shows very little variability in form, but more abstract, flexible constructions make possible a lot of variability in form (see e.g. Eskildsen 2012). Inter- and intra-individual variability have been studied especially in the context of complex, dynamic systems (see e.g. Spoelman & Verspoor 2010; Murakami 2013; Tilma 2014; Lowie & Verspoor 2015) while variability within constructions, i.e. their lexical specificity vs. abstractness, has been studied in usage-based studies (see e.g. Mellow 206; Eskildsen 2009, 2012; Roehr-Brackin 2014).

In this section, first, inter-individual variability in L2 learning will be briefly discussed. After that, intra-individual variability will be examined in more detail, since it is one of the main interests of this study (the second research question). After that, variability within constructions will be briefly discussed to show how it has been used in this study to operationalize the third main interest of the study, namely, the abstractness of constructions (the third research question). Finally, the two theoretical frameworks forming the basis of the study (Complex Dynamic Systems Theory and Usage-based Linguistics) will be compared in terms of how they see the role of variability in development.

The Complex Dynamic Systems Theory (CDST) approach highlights the importance of the individual when studying development (see e.g. Verspoor, Lowie & van Dijk 2008; Lowie & Verspoor 2015). As pointed out earlier, if we separate the learner from the learning, we get no insights into the process of development. Longitudinal, case study, time-series approaches are therefore useful when we are interested in the learning process. (Larsen-Freeman & Cameron 2008: 245.) This point is also made by van Geert and Steenbeek (2005) when they propose that a dynamic equation that represents a relation between an earlier state of a certain aspect (e.g. the use of a certain construction yesterday) and a later state of the same aspect (e.g. the use of the construction today) may be a better way to describe learning than an

equation that represents a relation between an independent variable (e.g. instruction on a construction) and a dependent variable (e.g. the use of the construction by the learner).

When individual learning trajectories have been traced longitudinally, it has been shown that no two learners develop in the same way; in other words, L2 learning displays a lot of inter-individual variability (see e.g. Lowie & Verspoor 2015). It has been found that even identical twins showed clear differences in their L2 development in terms of their sentence complexity (Chan, Verspoor & Vahtrick 2015). Moreover, when 22 L2 English learners with similar backgrounds were followed over one academic year, it was found that all of the learners had highly individual learning trajectories in terms of lexical and syntactic complexity (Lowie & Verspoor 2019). These studies show that even learners with similar backgrounds (the initial conditions are alike) and similar exposure (the external resources are alike) show differences in development. However, regardless of the individual learning trajectories, there are some similar patterns in L2 development (for a general discussion, see Ellis 2007). One of these general patterns that seems to be worth investigating further is the amount of intra-individual variability in periods of rapid development (Lowie & Verspoor 2019). Let us now turn to the role of intra-individual variability, which has been the subject of growing interest in language learning studies in recent years in the context of complex dynamic systems.

Intra-individual variability refers to changes in a variable within an individual over multiple measuring points in time (van Geert & van Dijk 2002: 341). In language learning this means, for example, that in one usage event the learner might overuse a certain construction but in the next one its use decreases. This kind of development can clearly be seen in an L2 learner's negation strategies in a study originally reported by Cancino, Rosansky and Schumann (1978) and later analyzed by van Dijk, Verspoor and Lowie (2011) from a CDST perspective. The learner's, Jorge's, language exhibits variability in the use of four different negation strategies: (1) *No*-V, (2) *don't* V, (3) aux-neg and (4) analyzed *don't*.

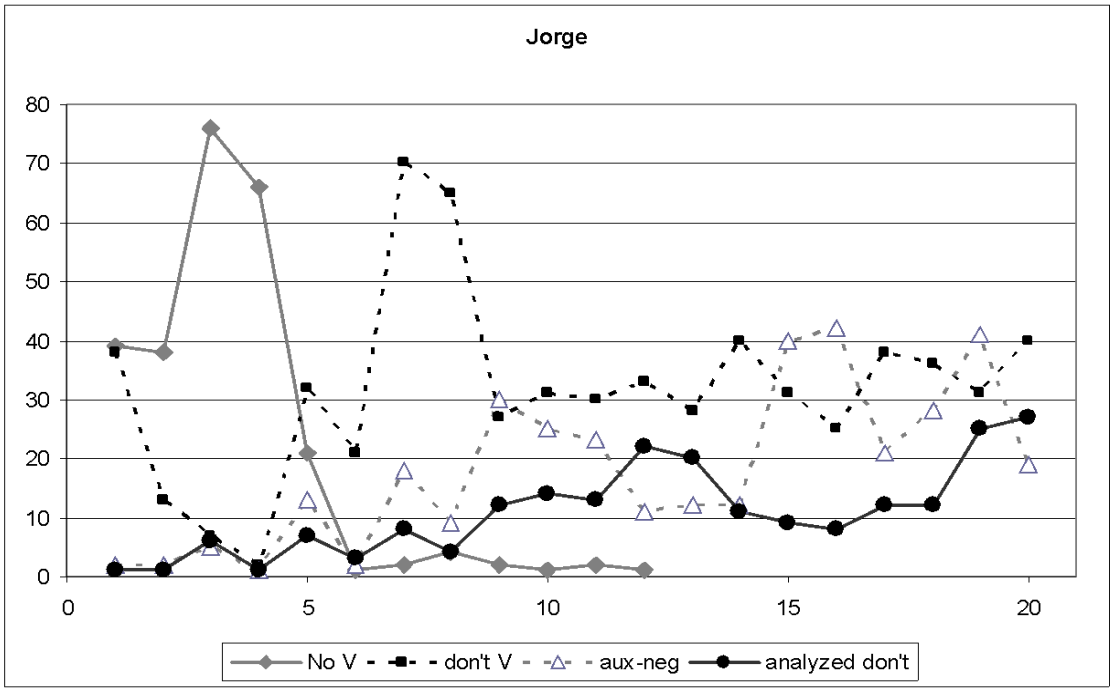


Figure 8 Jorge's use of negation strategies over time (Cancino, Rosansky & Schumann 1978)

Figure 8 presents the proportion of negation strategies using a verb in the total number of negatives in any construction using adjectives, nouns or verbs. In Figure 8, some peaks in the use of *No*-V (non-target-like) and *don't* V (both non-target-like and target-like) can be seen. Van Dijk, Verspoor and Lowie (2011) argue that this kind of variability is functional for L2 development and it is an intrinsic property of any developing system.

Early examples of research into the role of variability in development include a study by Thelen and Smith (1994). They pointed out that in motoric learning, the child's performance exhibits more variability in periods of rapid development than during periods of slower progress. According to Thelen and Smith (1994), the larger variability in behavior is related to the learner's attempts to perform the task: when the learner is exploring and trying out different ways of completing the task, more variability can be observed. When something new is being learned, the new modes of behavior may alternate with old modes of behavior, leading to increased variability. In line with Thelen and Smith (1994), Rod Ellis (1994: 137) argued that in L2 learning, variability occurs more in the early stages of development than at the later stages. Ellis (1994) pointed out that variability could give us important insights into the stages in L2 development. Later, an analogy with language learning was again made by van Dijk, Verspoor & Lowie (2011: 59), when they argued that higher degrees of variability occur in the early stages of L1 and L2 development, when the learner is trying out different linguistic means to convey a certain meaning. The degree of variability decreases as development proceeds: when the most effective ways of conveying meanings have been found, the less effective strategies can be discarded (van Dijk, Verspoor & Lowie 2011: 59).

Several studies have used longitudinal data to examine patterns of variability in L2 development. It has been reported that the learner's performance fluctuates when measured both with broad, holistic measures and with more specific measures. Verspoor, Lowie, Chan and Vahtrick (2017) found that as the holistic ratings of an advanced English learner's texts increased, they also showed more variability, indicating a shift in the learner's development. There are also data from a number of studies suggesting that many specific structural measures, e.g. complexity and accuracy measures, show increased variability at times of rapid development or in the vicinity of a developmental jump. Verspoor, Lowie and van Dijk (2008: 222) showed that increased variability in average word length precedes a clear developmental jump in an English L2 learner's language. In the development of a Dutch learner's L2 Finnish, a higher degree of variability in case errors was detected in the earlier stages of development; later, the system stabilized and less variability occurred (Spoelman & Verspoor 2010: 540–541). Tilma (2014: 145) demonstrated that for one Finnish L2 learner, errors in both use and forms of cases showed more variability initially, but that accuracy ratios stabilized as development proceeded.

Increased variability is thus related to periods of rapid development because in these phases the learner tries out and explores new things. Increased variability can also be related to development and successful learning in general. It has been shown that learners whose language shows a lot of variability may be more successful than less variable learners. Lowie and Verspoor (2019) showed that learners with a higher degree of variability in their holistic scores in writing tasks made higher gains in proficiency over time. In a study of twins it was shown that the twin who showed more variability in her language progressed more than her sister did (Chan, Verspoor & Vahtrick 2015). Also Huang, Steinkrauss and Verspoor (in prep.) show that a learner with a high degree of variability made better gains in proficiency than did her peer whose holistic scores exhibited less variability. Variability, then, seems to be "a characteristic of a creative learning process, in which new things are tried out" (Lowie & Verspoor 2018: 19), and it "can be an essential factor in promoting development" (van Geert & van Dijk 2002: 341).

Variability has also been studied in certain constructions used by an individual learner. Investigations of this kind have been conducted in studies adopting a purely usage-based approach (see e.g. Mellow 2006; Eskildsen 2009, 2012; Roehr-Brackin 2014) . In these studies, variability has been seen as an indicator of the abstractness of a certain construction. For example, Eskildsen (2012) used the Type Token Ratio (TTR) to measure the abstractness of L2 constructions at different phases of development. When the TTR is 1, all of the constructions are different, i.e., a high degree of variability can be detected. These constructions can be seen as abstract and productive: they are not tied to lexically specific items (in other words, different words are used within the construction). In contrast, when the TTR is closer to 0, the learner's constructions are more alike: the learner reuses the same lexical items in the construction (more lexically specific constructions are used) so the degree of variability is smaller and the learner's constructions are less abstract and productive. In sum, variability within a construction can be used to examine the abstractness of the learner language construction. This line of thinking is also used in this study to

explore the abstractness of the learners' constructions, although the TTR is not calculated. The process of operationalization is described in detail in Section 4.

As described above, both CDST-oriented perspectives and usage-based linguistics (UBL) have investigated variability in learner language. These two perspectives view the role of variability differently in the early stages of the learning process. CDST argues that there is a high degree of variability at the beginning of the learning process and that this increased variability is functional: the learner needs to try out and discover different ways of expressing meanings in social interaction. In UBL, learning is seen to start off with the use of lexically specific items that show very little variability both in form and function. The explorative part of learning starts after this fixed phase, when these familiar expressions are set against other, new, expressions and the familiar expressions can also be varied. These views seem contradictory with regard to the role of variability. This raises the question of whether it is possible that when something new is being learned, learner language shows both variability, as assumed in CDST, and stability, as assumed in UBL, at the same time. Jorge's expressions of negation, presented in Figure 8, seem to answer this question (data from Cancino, Rosansky & Schumann 1978). Jorge uses four different types of constructions to express negation. Some of them are target-like and some non-target-like, and some of them show peaks and dips over time. There is variability in his data. At the same time, the *no* V and *don't* V constructions can be seen as item-based: they are un-analyzed and fixed to specific lexical items (*no* and *don't*). From this we can conclude that at the beginning of the learning process the learner may indeed try out different ways of expressing meaning and may show variability, but some of the constructions used may be item-based and may be stable elements in the learner language. Moreover, possibly the "trying out" phase can only begin when the learner already has a range of options (some item-based and others abstract) from which to choose.

So far in this work, the usage-based perspective on L2 development and Complex Dynamic Systems Theory have been discussed. The key terms of the current study - the interaction of subsystems, variability patterns, and the abstractness of L2 constructions - have also been presented. In the next section, the characteristics of the Finnish language and its learning as an L2 will be discussed.

3 LEARNING L2 FINNISH

This section presents an overview of the basic features of Finnish language (Section 3.1), focusing especially on how evaluation (Section 3.2) and existentiality (Section 3.3) are expressed in Finnish. Section 3.4 gives an overview of previous research on the development of L2 Finnish.

3.1 Basic features of Finnish

The Finnish language is part of the Uralic language family. It is an agglutinative language: words can be inflected by adding endings (bound morphemes, suffixes) to stems (Karlsson & Chesterman 1999). Because of its rich morphology, Finnish has often been considered difficult to learn (see Martin 1995: 7). Also the fact that many frequent words in Finnish are original, not loaned (for etymology of Finnish words, see Häkkinen 1997) can be considered to make the language difficult for its L2 learners. However, the fact that Finnish has been considered as difficult to learn may be due to the fact that it is structurally different from e.g. Germanic languages.

This section presents some basic features of the phonology, morphology and syntax of the Finnish language, and gives an overview of the key differences between standard and colloquial language. After that, some aspects of the Finnish constructions under investigation in this study - evaluative constructions (Section 3.2) and the existential construction (Section 3.3) - are presented. The examples given in these sections are conventional, target-like forms of Finnish: learner language will be discussed in Section 3.4: L2 Finnish development.

Phonology. Finnish speech sounds include eight vowels, which are divided into front (*i*, *e*, *y*, *ö*, *ä*) and back vowels (*u*, *o*, *a*) (VISK § 2). A special characteristic of Finnish phonology is vowel harmony: only either front or back vowels are allowed within a word (except in compound words) (Laakso 2011: 182). The vowels *i* and *e* are neutral in this respect: they can be used with both front and back vowels (VISK § 2). Because of vowel harmony, suffixes typically have front and back allomorphs

(Laakso 2011: 182). In this work, these are marked with a capital letter, e.g. the inessive suffix *-ssA* includes the allomorphs *-ssa* and *-ssä*.

Finnish speech sounds include the following consonants – a total of 13 or 17, depending on how they are counted: *p*, *t*, *k*, (*b*), *d*, (*g*), *m*, *n*, *ŋ*, (*f*), *s*, (*š* aka *ʃ*), *h*, *l*, *r*, *v*, and *j* (VISK § 3); *b*, *g*, *f*, and *š* occur mainly in loan words (VISK § 6). Consonant gradation, which applies to the sounds *k*, *p*, and *t* (VISK § 41), causes morphophonological alternations within words. These three consonants appear either in the 'strong' or in the 'weak' grade, depending on whether the following syllable was originally open or closed. (Laakso 2011: 184.) Consonant gradation can therefore be seen as a phonological process even though in contemporary Finnish it cannot be seen as a purely phonological phenomenon (Karlsson 1983: 323). The strong and weak forms can manifest themselves in length (e.g. *kur**kk**u* : *kur**k**un* 'cucumber'), in quality (*ko**t**i* : *ko**d**in* 'home'), or in the case of *k*, in absence (*ke**k**o* : *keon* 'pile') (VISK § 41). In writing, the length of a sound is marked by doubling the letter, as in e.g. *tuli* vs. *tuuli*.

The two forms of variation in speech sounds mentioned above, namely vowel harmony and consonant gradation, are morphophonological in nature. These changes are manifestations of morphophonological variation, which is a typical characteristic of the Finnish language. (VISK § 40.)

Morphology. There are free and bound morphemes in the Finnish language. Most bound morphs in Finnish are suffixes (Laakso 2011: 182). Words in Finnish can be divided into three groups following morphological criteria: 1) verbs (inflecting for tense, person, and mood), 2) nouns, adjectives, numerals, and pronouns (inflecting for case and number), and 3) uninflected or partly inflected particles (Karlsson & Chesterman 1999; Laakso 2011; VISK § 63). The inflection of the first group (verbs) will be described in Section 3.2.1 (evaluative verbs); the inflection of the second group (with reference only to adjectives, as they are relevant in this study) will be described in Section 3.2.2. In Finnish, negation can be expressed with the verb *ei*, which is inflected (Karlsson & Chesterman 1999). *Ei* can also be used uninflected as a negation particle (VISK, määritelmät 'definitions'). Questions can be formed in two ways (see the section on evaluative verbs). In 'yes/no' questions, the morpheme *-kO* can be added to word stems in (Karlsson & Chesterman 1999: 71). A question may also start with an interrogative pronoun, such as *mikä* 'what' or *missä* 'where' (VISK § 1678).

In the Finnish language, the two most important ways to form new words - derivation and composition - are morphological. In derivation, new words are formed by adding affixes to the stem. (VISK § 146.) For example, the verb *matkustaa* 'travel' is derived from the noun *matka* 'a trip'. In composition, two or more words are linked together to form a new word (VISK & 146), like in *työpaikka* 'job', which consists of two words, *työ* 'work' and *paikka* 'place'.

Like the phonological and morphological phenomena that are intertwined in morphophonological variation (VISK § 40), morphology and syntax are also intertwined in aspects like congruence between the verb and the subject (see Karlsson & Chesterman 1999: 55–60). In these morphosyntactic phenomena, a syntactical feature causes changes in morphemes.

Syntax. In Finnish, the predicate often comes after the subject: Finnish can therefore be categorized as a SVO language (Subject, Verb, Object: direct word order) (Hakulinen & Karlsson 1995: 301-302; Laakso 2011: 190). In some sentence types, like the existential sentence and the possessive sentence, the predicate comes before the subject (VISK § 891) (see Section 3.3), and, depending on the emphasis, this kind of indirect word order is possible also in other sentence types.

There are several different sentence types in Finnish: three multi-purpose sentence types (transitive, intransitive, and copula sentences), and eight special sentence types (VISK § 891). Among these special sentence types, three are relevant in the context of this study: the causative emotion sentence (see 3.1.1), the existential sentence (see 3.1.2), and the possessive sentence (a sub-type of the existential sentence, see 3.1.2). All these sentence types can also be used as interrogatives (see more about interrogatives in 3.1.1) and as subordinate clauses. In Finnish, a subordinate clause begins with either a conjunction, a question word, a verb with the interrogative suffix *-kO*, or a relative pronoun (VISK § 884). As Example 7 shows, the word order in the subordinate clause is similar to that of the main clause. Learning to use subordinate clauses in Finnish is therefore not expected to cause L2 Finnish learners particular trouble (Reiman, 2011a).

(7)	*Toivo-n,*	*että*	*sinä*	*tule-t*	*pian.*
	Hope-1SG	that	you	come-2SG	soon
	'I hope that you come soon.'				

Standard and colloquial language. Standard Finnish and colloquial Finnish differ in many ways (see Karlsson & Chesterman 1999: 244-248). The most important aspects of colloquial Finnish in the context of this study are the colloquial forms of the personal pronouns and some differences in lexicon. The following shows first the standard form and then the different variants of some of the personal pronouns used in colloquial language: *minä* vs. *mä* 'I', *sinä* vs. *sä* 'you', *hän* vs. *se* 'he/she', *he* vs. *ne* 'they'. These forms are also used when the pronouns are inflected, e.g. *minulla on* vs. *mulla on* 'I have'; *minun* vs. *mun* 'my'. The most important lexical difference in the context of this study is the use of the verbs *tykätä* and *pitää*, both meaning 'like'. *Tykätä* is the colloquial lexical variant while *pitää* is used mainly in standard (often written) language. The colloquial forms are widely used, even on public occasions. Standard Finnish as a whole is seldom the first variety of Finnish that speakers learn, although everyone learns it from an early age and it still has a strong position in the public sphere. There are some unwritten norms about good language for language used in the media, but there are no official regulations for media language in Finland. (Nuolijärvi & Vaattovaara 2011.) As pointed out by Mantila already in 2004, among young people, some widely spread colloquial features are used even in written texts (Mantila 2004). This kind of blending of spoken and written forms can be expected to be even more spread nowadays. In other words, colloquial language can be encountered in Finland in both spoken and written forms as well as in the public sphere.

3.2 Expressing evaluation in Finnish

3.2.1 Evaluative verbs

Expressing evaluation - that something is good or bad, desirable or undesirable - is probably a very fundamental aspect of our cognition: we tend to evaluate the things we see and experience. As pointed out by Alba-Juez and Thompson (2014: 5), expressing evaluation is "an all-pervading feature of language" and traces of evaluation can be found in almost every text or even every sentence. Alba-Juez and Thompson (2014) refer to studies by several scholars, including Osgood, Krzeszowski, and Felices-Lago, when they point out that the earliest categorization human babies make is the division of things into *good* and *bad*, and therefore the positive/negative axis is a very basic and important aspect of language.

There are many different ways of expressing evaluation, and many different linguistic means (Martin & White 2005). As Heinonen (2017: 40), who has studied the expressions of evaluation used by teachers in Finnish speaking classrooms points out, it can be difficult to study the language of evaluation because evaluations can be expressed in various ways at various levels. Expressions of evaluation can be found at the phonological level (e.g. prosodic features), the morphological level (e.g. evaluative prefixes or suffixes), the lexical level (words with an evaluative load), the syntactic level (e.g. word order), and the semantic level (e.g. the context dependency of meanings) (Alba-Juez & Thompson 2014: 10-11). In the present study, evaluations were expressed almost exclusively at the lexical level, and the two most important linguistic means of doing this that were detected in the data were evaluative verbs and evaluative adjectives. These two types of expressions are the focus of this section.

Verbs of emotion in Finnish, including those of evaluation, have been studied by Siiroinen (2001). Siiroinen divides Finnish verbs expressing emotion and evaluation into four groups, based on Croft's (1991) division of verbs: inchoative, activity, stative, and causative verbs. According to Siiroinen (2001), inchoative verbs of emotion express a change in emotional state. In these constructions, the experiencer has no control over the change, as in the expression *Hän pelästyi.* 'He took fright'. (Siiroinen 2001: 35.) Activity emotive verbs are similar to concrete verbs*: Hän nauttii* 'He enjoys' (Siiroinen 2001: 43). The participants in this study used mainly stative and causative verbs to express evaluation, so only these types will be described here in greater detail.

When the emotion is expressed with a stative verb of emotion, the emotional state described is rather stable and the experiencer (the one who feels) is the grammatical subject of the construction (Siiroinen 2001: 44). Example 8 shows a stative emotive verbal construction.

(8) *Minä* *rakasta-n* *sinu-a.*
I love-1SG you-PAR
'I love you.'

As in Example 8, many stative constructions expressing emotion include a complement, which is very natural; we want to express our evaluation of something. In a stative verbal construction, the complement of the verb can be a noun phrase (NP) or a non-finite clause (NFC), depending on the verb (for some verbs both are possible). If the NP complement is in the nominative, genitive, partitive, or accusative case, the complement is regarded as an object of the construction (VISK § 925), like in Example 8. In the *rakastaa* 'love' construction, the object is always in the partitive form, i.e. the verb *rakastaa* governs the partitive case (Markus & Pomozi 2004). Some other stative verbal constructions govern another case (for government, see Alhoniemi, Ikola & Rintala 1992: 170-171), e.g., the *tykätä* 'like' construction requires the elative case of the NP complement (Markus & Pomozi 2004) (see Example 9). If the complement is a non-finite clause, a basic form of the A-infinitive is used, as shown in Example 10 (for infinitives, see VISK § 120). A verb chain, with an MA-infinitive form (see Karlsson 1999: 188–192), as in Example 11, is also a possible complement in a stative emotion construction. Like nouns, MA-infinitives often take a case ending (Karlsson & Chesterman 1999: 24).

(9) *Minä* *tykkää-n* *pitsa-sta.*
I like-1SG pizza-ELAT
'I like pizza.'

(10) *Minä* *tykkää-n* *laula-a* *kuoro-ssa.*
I like-1SG sing-INF choir-INE
'I like to sing in a choir.'

(11) *Tykkää-n* *men-nä* *nukku-ma-an* *aikaisin.*
Like-1SG go-INF sleep-3.INF-ILL early
'I like to go to sleep early.'

The verb of emotion within the stative emotion construction (e.g. *tykätä* 'like' in Examples 9–11) shows inflection for person (see Karlsson & Chesterman 1999: 21–22). The negation is expressed with the word *ei* (Karlsson & Chesterman 1999: 69). Examples 12–17 show the conjugation of the verb *rakastaa* 'love' for person, and its negation is also presented. In other than the third persons, the pronoun can be left out. For clarity of presentation, Examples 12–17 do not have complements.

(12) *Minä* *rakasta-n* / *e-n* *rakasta*
I love-1SG / NEG-1SG love
'I love/don't love'

(13) *Sinä* *rakasta-t* / *e-t* *rakasta*
You love-2SG / NEG-2SG love
'You love/don't love'

(14) *Hän* *rakasta-a* / *e-i* *rakasta*
He/she love-3SG / NEG-3SG love
'He/she loves/doesn't love'

(15) *Me* *rakasta-mme* / *e-mme* *rakasta*
We love-1PL / NEG-1PL love
'We love/don't love'

(16) *Te* *rakasta-tte* / *e-tte* *rakasta*
You love-2PL / NEG-2PL love
'You love/don't love'

(17) *He* *rakasta-vat* / *ei-vät* *rakasta*
They love-3PL / NEG-3PL love
'They love/don't love'

Contrary to the situation in stative verbal constructions, in causative verbal constructions the experiencer is the grammatical object of the construction (see Vilkuna 2000: 134; Siiroinen 2001: 46-47). In these constructions, the verb is always in the third person singular form: the experiencer is marked with a pronoun, noun, or proper noun (see Examples 18 and 19) in the partitive case (see Siiroinen 2001: 48).

(18) *Minu-a* *ärsyttä-ä.*
I-PAR annoy-3SG
'I am annoyed.'

(19) *Sinu-a* *ärsyttä-ä.*
You-PAR annoy-3SG
'You are annoyed.'

Evaluative verbs (like any verb in Finnish) can be conjugated in four tenses: present, past, perfect, and pluperfect (see Karlsson & Chesterman 1999: 152-161). The grammatical marker for the past tense is *-i* (Karlsson 1999 & Chesterman: 152). However, some verbs such as *haluta* 'want' and *tykätä* 'like' have a change in the stem when the past tense is formed: the last A is changed to *s* (Karlsson & Chesterman 1999: 155). The perfect and pluperfect are compound tenses: they consist of two words (Karlsson & Chesterman 1999: 156, 158). The first part is the verb *olla* 'be' and the second is the main verb, used in the -nUt participle (VISK § 122). Examples 20–23 show the use of the four tenses with the verb *tykätä* 'like' in the first person singular form.

(20) *Minä* *tykkää-n* *opiskelu-sta.*
I like-1SG studying-ELAT
'I like studying.'

(21) *Minä* *tykkä-si-n* *opiskelu-sta.*
I like-PST-1SG studying-ELAT
'I liked studying.'

(22) *Minä* *ole-n* *tykän-nyt* *opiskelu-sta.*
I be-1SG like-PPC studying-ELAT
'I have liked studying.'

(23) *Minä* *ol-i-n* *tykän-nyt* *opiskelu-sta.*
I be-PST-1SG like-PPC studying-ELAT
'I had liked studying.'

Like almost all verbs, also evaluative verbs can be used in four moods: indicative, conditional, potential, and imperative (see Karlsson & Chesterman 1999: 162–171). The participants in this study used evaluative verbal constructions only in the indicative and conditional forms. There is no specific morphological marker for the indicative (Karlsson & Chesterman 1999: 162). For the conditional, the marker is *-isi*, which is added to the stem before the personal suffix (Karlsson & Chesterman 1999: 162). Example 24 shows the verb *haluta* 'want' in the conditional form.

(24) *Halua-isi-n* *matkusta-a* *Saksa-an.*
Want-COND-1SG travel-INF Germany-ILL
'I would like to travel to Germany.'

Finnish verbs are also inflected for voice (active and passive). The participants of this study did not use the passive voice when expressing evaluation.

In Finnish, a question normally starts with an interrogative pronoun, such as *mikä* 'what' or *missä* 'where', or with a verb which has a suffix *-kO* (VISK § 1678). Examples 25 and 26 show these two types of questions.

(25) *Mi-stä* *musiiki-sta* *tykkää-t?*
What-ELAT music-ELAT like-2SG
'What sort of music do you like?'

(26) *Tykkää-tte-kö* *pitsa-sta?*
Like-2PL-Q pizza-ELAT
'Do you like pizza?'

Two evaluative verbal constructions are especially important in the context of this study, because the third research question concerns the development of productivity and abstractness of two verbal constructions, *haluta* 'want' and *tykätä* 'like'. These two verbs can be conjugated like any other verb in Finnish and therefore the slot for the verbs *haluta* and *tykätä* within these constructions can be very variable. In addition, the complement slot can be variable in both cases. The complement of the verb *haluta* can be a noun phrase (NP), a non-finite clause (NFC), or a subordinate clause (see Kielitoimiston sanakirja). Example 24 shows a NFC complement. The form of the NP with the *haluta* construction depends on the context; it can be in the partitive, genitive, or accusative case. Examples 27–29 show these three different options. The verb *haluta* can also have a subordinate clause as a complement. Example 30 shows this kind of construction.

(27) *Halua-n* *pitsa-a.*
Want-1SG pizza-PAR
'I want (some) pizza.'

(28) *Halua-n* *pitsa-n.*
I want-1SG pizza-GEN
'I w ant (the whole) pizza.'

(29) *Halua-n* *sinu-t* *tä-hän* *joukkuee-seen.*
Want-1SG you-ACC this-ILL team-ILL
'I want you in this team'

(30) *Haluan,* *että* *tulet* *tänne.*
Want-1SG that come-2SG here
'I want you to come here.'

The verb *tykätä* can have either an NP or an NFC as a complement. The NP complement is always in the elative case (Markus & Pomozi 2004) (see Example 25). The case marker of the elative case is *–stA* (Karlsson & Chesterman 1999: 110). Example 31 shows an example of a non-finite clause complement construction within the *tykätä* 'like' construction.

(31) *Tykkää-n* *laula-a* *kuoro-ssa.*
Like-1SG sing-INF choir-INE
'I like to sing in a choir.'

3.2.2 Evaluative adjectives

Besides verbs, also adjectives can be used to express evaluation. It should be noted that not all adjectives are evaluative; there is also a large group of adjectives that describe things without evaluating them, e.g. *pieni* 'small', or *kova* 'hard'. However,

whether an adjective is being used for evaluation or description often depends on the context. Some basic features of (evaluative) adjectives will be described in this next section.

Evaluation is typically expressed by an adjectival construction, which often occurs in a comment clause. In a comment clause, the speaker expresses his or her evaluation of, or attitude toward, something (VISK § 1212). Typically it is a copula clause (VISK § 1212), e.g., *Se on tosi outoa* 'It is really weird'. In this sentence type, the adjective is used predicatively (see Hakulinen & Karlsson 1995: 77). An adjective can also be used in sentence types other than those with a copula clause to express evaluation. The crucial point is that the sentence includes an evaluative element. (VISK § 1212.) For example, in this study, expressions like *Söimme hyvää ruokaa* 'We ate good food' have been categorized as evaluative because besides expressing the fact that the speaker ate with other people, she also expresses her evaluation of the food: it was good. In this utterance, the adjective is used attributively (see Hakulinen & Karlsson 1995: 77) in a transitive construction. In the data of this study, adjectives were also used in a possessive construction, e.g. *Minulla ei *oli *hyvää *ideoja* 'I didn't have any good ideas', and in an existential construction, e.g. *Ruotsissa on hyvä *maaster* 'There is a good master's program in Sweden'.[10]

Adjectives show inflection for case and number (Karlsson & Chesterman 1999: 18) and they typically appear before their heads (Laakso 2011: 192) (see Examples 32 and 33).

(32)	*Käv-i-mme*	*kiva-ssa*	*paika-ssa.*
	Go-PST-1PL	nice-INE	place-INE
	'We went to a nice place.'		

(33)	*Käv-i-mme*	*kivo-i-ssa*	*paiko-i-ssa.*
	Go-PST-1PL	nice-PL-INE	place-PL-INE
	'We went to nice places.'		

Some adjectives do not show inflection; examples are *ensi* 'next' (Hakulinen & Karlsson 1995: 78) or the adjectival-like evaluative word *lempi* 'favorite'. The comparison of adjectives is expressed with the comparative and the superlative. The grammatical marker for the comparative is *-mpi*, and for the superlative it is *-in*. (Karlsson & Chesterman 1999: 211–217.)

3.3 Expressing existentiality in Finnish

Existentiality is expressed with the existential construction in Finnish: *Suomessa on järviä* 'There are lakes in Finland'. This construction is peculiar in many ways. The

[10] The four examples given in this paragraph are learner-language constructions from the data of this study although the examples given in this section are generally conventional Finnish constructions, not learner-language constructions

existential sentence has been studied and described by numerous researchers, for example Ikola (1954, 1964), Hakanen (1972), and Vähämäki (1984). The existential sentence has been described from the point of view of cognitive linguistics by e.g. Perko (1992), Huumo and Perko (1993a, 1993b), Huumo (1997, 2003), and Helasvuo and Huumo (2010). According to Ikola (1954), a sentence is an existential sentence if it is about a certain place or state and it expresses one of the following things about it: 1) what the place or state includes, 2) what it is going to include, or 3) what it has stopped including. Generally speaking, the existential construction expresses the idea that there is something somewhere. In this section, the elements of the Finnish existential construction will be described insofar as they are relevant to the context of this study.

The Finnish existential construction has many special characteristics: there is no congruence between verb and subject, the subject comes after the verb, and the subject can be in the partitive case (VISK § 893). In a prototypical existential construction, the predicate is the verb *olla* 'be', but some other intransitive verbs can also be used (VISK § 893). Example 34 presents a prototypical example of the Finnish existential construction.

(34)	*Suome-ssa*	*on*	*paljon*	*järv-i-ä.*
	Finland-INE	be(3SG)	many	lake-PL-PAR
	'There are many lakes in Finland.'			

As Example 34 shows, the subject of the existential construction can be in the partitive. This is the case if the subject is plural or if the subject is an uncountable (or mass) noun (Example 35). In negative existential constructions the partitive must be used (Example 36). (VISK § 893.)

(35)	*Tee-ssä*	*on*	*kofeiini-a.*
	Tea-INE	be(3SG)	caffeine-PAR
	'There is caffeine in tea.'		

(36)	*Erfurti-ssa*	*ei*	*ole*	*islanni-n*	*kurssi-a.*
	Erfurt-INE	NEG	be	Icelandic-GEN	course-PAR
	'There is no Icelandic course in Erfurt.'				

The case choice for the subject in the existential construction (nominative vs. partitive) has been shown to cause difficulty to L2 Finnish learners. This, as well as L2 Finnish learners' use of existential constructions in general, has been studied by Kajander (2013), and Ivaska (2010, 2011). The findings of these studies will be discussed in Section 3.4.

The noun phrase in the existential construction, which refers (normally) to a place, is topicalized: the existential construction says something about this place. Often this noun phrase refers to something that has not previously been mentioned: it introduces a new topic in the discourse. (VISK § 894.) In the data of this study, the

noun phrase is often in either the inessive or the adessive case. The noun phrase can also indicate possession, and these possessive constructions are sometimes categorized as a subtype of the Finnish existential construction (see VISK § 895) because their structure resembles the structure of the existential construction (Example 37). In this study, the possessive construction is excluded from the analysis because its meaning differs from the meaning of the existential construction, even though the constructions resemble each other structurally.

(37) *Minu-lla* *on* *työpaikka.*
I-ADE be(3SG) job
'I have a job.'

Besides the possessive construction, Finnish also has a construction called a *tilalause* (a clause describing states of the weather or certain natural or temporal conditions) which because of its pattern has been categorized as a subtype of the existential construction (e.g. in VISK § 891, 900). Structurally this construction can be very similar to the existential construction, but the meaning is slightly different: it does not explicitly express the existence of something somewhere. However, in the current study it was decided to include this construction in the analysis because it expresses the presence of the characteristic in question (e.g. coldness, as in Example 38) in the place that the noun phrase refers to. In other words, the conceptualization of the *tilalause* (for which there is no direct equivalent in English) is close to the conceptualization of the existential construction.

(38) *Suome-ssa* *on* *kylmä.*
Finland-INE be(3SG) cold
'It is cold in Finland.'

In this section, some basic features of Finnish, as well as conventionalized, target-like ways of expressing the meanings of evaluation and existentiality, have been described. It should be noted, however, that the primary aim of this study is not to compare the linguistic means that learners use to express these meanings with conventional constructions or a 'native-like' repertoire: the starting point of the study is not comparative. Instead, the main aim of the present study is to discover what kind of constructions learners use to express these meanings and how they develop over time. However, since the use of conventional constructions to express meanings in the target language can be seen as a goal of L2 learning, the conventional constructions do play a role in the investigation of L2 development.

3.4 L2 Finnish development

L2 Finnish development is a relatively young branch of research, but during the past 30 years it has become of increasing interest to researchers. Many of the aspects of L2 Finnish that have already been studied are relevant in the context of this study. These aspects include, for example, the use of constructions at different proficiency levels, the processing of L2 Finnish forms (also in interaction), cross-linguistic influence, and vocabulary learning. Some of the findings of these studies and their relevance for the current study are discussed in this section. However, the main interests of the current study - interaction, variability, and abstractness in learners' developing L2 constructions - have not been studied extensively in the context of L2 Finnish, although there are two earlier studies that have explicitly investigated some aspects of the interaction of subsystems and variability in L2 Finnish: Spoelman and Verspoor (2010) and Tilma (2014). These studies will be discussed at the end of this section.

The use of L2 Finnish constructions across different proficiency levels (CEFR) has been studied in the extensive Cefling and Topling research projects (University of Jyväskylä).[11] In these research projects, the written texts of L2 learners (both adult and young) from CEFR levels A1 to C2 have been studied from various points of view. The research setting in the Cefling project was cross-sectional, and in the Topling project the data collection was longitudinal. These studies give us valuable information about the constructions that characterize learner language at different proficiency levels, and how these constructions are used. The findings of these studies show that some constructions are used quite evenly across all proficiency levels. For example, the frequencies of negation and local cases do not vary greatly across the different levels, which shows that learners at all levels use these constructions to fulfil their communicative needs. With these constructions, the higher proficiency is manifested not by an increase in use but by an increase in accuracy. (Martin, Mustonen, Reiman & Seilonen 2010.) Mustonen (2015) shows that with local cases, higher proficiency is manifested by an increase in the use of local cases for expressing more abstract meanings (e.g. *olen kaupa**ssa*** 'I am in a shop' vs. *olen kuumee**ssa*** 'I have a fever'). Other constructions are used more at the higher proficiency levels than the lower levels. For example, the use of the passive increases relatively steadily from A1 to C2 level (Seilonen 2013: 58), and the transitive construction is used increasingly at B1 level (Reiman 2011b: 150). Reiman (2011b) shows that the transitive construction is used in more diverse environments as the proficiency level increases: the frequency of transitive constructions with infinitive structures showed an increase between level B1 and C2 (Reiman 2011b: 152) and a steady increase in the use of transitive constructions with passive structures could be identified up to B level (Reiman 2011b: 151). The findings of cross-sectional studies are valuable in the formulation of research questions and hypotheses for longitudinal case studies, like the current study: they can give us insights into how development

[11] The Cefling (2007–2009) and Topling (2010–2013) projects were funded by the Academy of Finland; the project leader was Maisa Martin.

might be manifested. For example, from such findings we might predict that when individual learners express evaluation, there will be an increase in the use or accuracy of certain types of constructions, or that the constructions will be used in more varied ways and contexts over time.

Finnish being a morphologically rich language, L2 Finnish researchers have been interested in the processing of morphological forms. Martin (1995) shows in her pioneering study of L2 Finnish processing - in line with later usage-based perspectives - that two processing mechanisms, namely analogical production (related to pattern finding and categorization) and rote learning (learning lexically specific items) play an important role in certain areas when learning Finnish morphology. Martin (1995) also shows that rule descriptions are used in L2 learners' morphological production. In the context of the current study, the morphological aspects of Finnish are especially relevant for the third research question, on the development of the abstractness of L2 constructions.

The rich morphology of Finnish has its consequences for the development of abstractness in the L2: the richer the morphology, the more diverse is the language the learners are exposed to, and this may speed up schema formation (Steinkrauss 2009; see also Section 2.1.3). Even though the schematization of L2 Finnish constructions has not been studied earlier, the productiveness of L1 speakers' syntax has been investigated by Nieminen (2007), who used the Finnish version of the Index of Productive Syntax (Nieminen & Torvelainen 2003) in her investigation of the development of morphosyntactic complexity in early child language. The Index of Productive Syntax (IPSyn) can be used to investigate the somewhat similar focus of the third research question of this study (the abstractness and productiveness of L2 constructions): although the IPSyn does not focus on particular constructions, it can be used to evaluate learner language productivity more holistically. In the Finnish version of the IPSyn, 49 different constructions are rated in terms of their productivity: if the learner uses only one form of a construction, it gets the value 1, and if more than one form is used (different realizations of the construction), it gets the value 2. The maximum IPSyn for a learner is therefore 98, and the higher the IPSyn, the more productive and complex the learner language. The IPSyn was developed to investigate L1 English development, and its original version focuses on the productiveness of syntax (Scarborough 1990). Because of the rich morphology of Finnish, the Finnish version of the IPSyn focuses on morphosyntactic aspects (Nieminen & Torvelainen 2003). The need for the Finnish version of the IPSyn indicates how different the development of productivity in L1 or L2 may be for morphologically rich and poor languages.

In the field of L2 Finnish development, some studies have emphasized the social and interactional aspects of L2 learning. In line with the dynamic usage-based perspective, where L2 constructions are seen to emerge from usage events, Suni (2008), Kurhila (2006) and Lilja (2010) have shown that interactions between L2 learners and more proficient speakers can function as resources for language development. Suni (2008) studied the interaction between an L1 Finnish speaker and two Vietnamese learners of Finnish and found - actually in line with CDST assumptions - a conditional interaction between the receptive segmenting of

morphology and the production of morphological forms. The segmenting of morphology, which manifested itself in repetition practices in interaction, was a precursor of the production of morphological forms (found in longitudinal data collection over 10 weeks). Suni (2008) also found that for the Vietnamese-speaking learners, the processing of morphology required more time than the processing of some other aspects, and she was therefore able to show that the typological difference between the L1 and L2 (isolating Vietnamese and agglutinative Finnish) affected the processing of linguistic forms. Suni (2008) also showed that meaning is often co-constructed in interaction between an L2 learner and a more proficient speaker, and how support from a speaking partner may help a beginner L2 learner to move toward more independent language use. This is also briefly discussed in the current study in Substudy 4.

Kurhila (2006) and Lilja (2010) both used Conversation Analysis in their investigation into learning L2 Finnish. Kurhila's (2006) findings indicate that linguistic forms are not a priority in interaction: returning to the talk in progress is often seen as more important than correcting the non-target-like forms produced by the L2 learner. In Kurhila's data, native speakers correct their non-beginner-learner speaking partners' turns (linguistic other-correction) "when they can avoid the sequentially disruptive consequences of the activity" (Kurhila 2006: 87). A similar kind of observation has been made by Aalto (1997). Aalto (1997: 178) investigated how L1 speakers and L2 speakers at different proficiency levels express opinions in interaction and shows that L1 speakers rarely react to L2 speakers' unconventional ways to express meanings. These findings resonate with the aims of the current study. In this study, the aim is to investigate how L2 learners manage to make meaning for the purposes of social interaction: what kinds of linguistic means they use to express a certain meaning. The primary focus is therefore not on linguistic forms. However, Kurhila (2006) shows that linguistic forms are sometimes brought up by L2 speakers in grammatical and lexical searches. Also from Lilja's (2010) analysis it becomes evident that L2 learners often focus on lexical questions in interaction, and that these interactions provide opportunities to learn new vocabulary.

Vocabulary learning in L2 Finnish has been studied by Honko (2013). Honko (2013) shows that lexical diversity (measured with the Sum of probabilities index) expanded in young L2 Finnish learners during a three-year follow-up. The development of lexical diversity is related to the abstractness of L2 constructions: the slots within a construction can only be varied if the learner has lexical material that they can use in the slot. As Honko (2013) pointed out, an extensive lexicon is often related to in-depth lexical knowledge and the ability to adapt lexicon to usage. The L2 learner needs to develop such knowledge in order to use new lexical items appropriately in their target constructions when the constructions become more productive over time.

Comparative settings have been used in several Finnish L2 learning studies. For example, Kaivapalu (2005) compared the inflection of Finnish nouns by speakers of Estonian (a language closely related to Finnish) and Russian (not a related language). The particular interest of her study was the influence of a closely related source

language on the processing of morphological inflections in L2 Finnish. She found similar processing mechanisms to those detected by Martin (1995), although Estonian and Russian speakers used different mechanisms: Estonian speakers relied more on analogies, and positive transfer could be detected in their language, while Russian speakers relied primarily on rule-based processing. Kaivapalu (2005) points out - in fact in line with the Dynamic Systems Theory Approach, although this theoretical framework had not yet been formulated - that the source language affects the inflectional process in interaction with other factors such as the complexity, productivity, and frequency of the targeted pattern and the strength of the morphological cues. In other words, the source language and the target language are in interaction with each other and with the developing L2: it is a dynamic system in which changes emerge from the interaction of its parts. Jarvis and Pavlenko (2008) also refer to cross-linguistic influence as a complex phenomenon with interacting variables, such as the language user's conceptualizations and perceptions.

The role of the same closely related source language, Estonian, on L2 Finnish development has also been studied by Spoelman (2011) and Nissilä (2011). Spoelman (2011: 298) showed that there was both positive and negative L1 influence on the use of the partitive in Finnish; a closely related language is thus not always helpful in L2 production. Nissilä (2011) pointed out that although a closely related language helps L2 Finnish learners in learning government, the most frequent verbs are the easiest for learners. As already pointed out, cross-linguistic influence is a complex and multifaceted phenomenon.

Cross-linguistic effects have also been studied by Ivaska (2015), who investigated how different L1s could be recognized in advanced learners' production by using a corpus-driven method called Key Structure Analysis. Ivaska (2015) found some differences in the academic texts produced by advanced L2 Finnish learners from different L1 backgrounds. For example, the more frequent use of conjunctions could be detected in the Hungarian-speaking and Japanese-speaking learners' corpora compared to the Czech-, Lithuanian-, and Russian-speaking learners' corpora. As Ivaska (2015) pointed out, these differences might be due to differences in the use of conjunctions and in academic writing conventions in the learners' L1. The differences between the advanced L2 Finnish learners and L1 speakers could also be explained by the fact that Finnish academic writing conventions were not (yet) familiar to the L2 learners: L2 learners may be familiar with target constructions but not with their use and special functions in an unfamiliar text genre. In his discussion Ivaska (2015) therefore emphasizes the usage-based nature of L2 development: the target-like, idiomatic usage of certain constructions requires participation in the usage events of the particular context (e.g. academic texts). Ivaska also refers to Complexity Theory in his discussion: the learner needs to adapt his or her linguistic system to the requirements of the new text genre, and changes in learner language emerge from the interaction between the learner language and the environment.

The theoretical framework of Complex Dynamic Systems has not (yet) been widely used in the field of Finnish L2 research. However, a rather similar way of viewing learner language as a system can be found in earlier studies. As already pointed out, Kaivapalu (2005) viewed the aspects of source and target language as

subsystems that affect each other, and Ivaska (2015) referred to the dynamic nature of L2 Finnish development. Siitonen (1999) showed that the interaction between morphology, syntax and semantics (i.e., the subsystems) of agentless constructions based on automative verb derivations is challenging for advanced L2 learners. However, there are only two studies that have explicitly used the Dynamic Systems Theory Approach to study L2 Finnish development. Spoelman and Verspoor (2010) investigated the interaction and variability patterns in complexity and accuracy measures in one beginner learner of Finnish, and Tilma (2014) investigated the interaction and variability in complexity and accuracy measures of two learner groups and two focal learners in different learning contexts: mainly meaning-based and mainly structure-based instruction. Spoelman and Verspoor (2010) focused on word, noun phrase and sentence complexity and accuracy (for the operationalization of these concepts, see Spoelman and Verspoor 2010: 8–9). Tilma's (2014) focus was also on syntactic and morphological complexity and accuracy (for the operationalization of these concepts, see Tilma 2014: 180).

Both Spoelman and Verspoor (2010) and Tilma (2014) found some interesting interaction patterns between different complexity and accuracy measures (i.e., different subsystems) in the developing L2 Finnish. Spoelman and Verspoor (2010: 547–548) showed that word complexity and noun phrase (NP) complexity as well as word complexity and sentence complexity are connected growers (in other words, they have a supportive relationship). However, a competitive interaction was found between NP complexity and sentence complexity, showing that there is a complex interaction between the different complexity levels (Spoelman & Verspoor 2010: 548). Quite surprisingly, in Spoelman and Verspoor's (2010: 550) study, the interaction between the complexity and accuracy measures seemed rather random: no competition between these aspects could be detected. In this regard, also Tilma's (2014) findings are mixed: for Andrea, who was learning Finnish by a mainly meaning-based approach, the growth in the use of complex clauses (complexity) was related to higher accuracy, i.e., these two measures were in a supportive relationship (Tilma 2014: 164). For Kim, who was learning Finnish by a mainly structure-based approach, this relationship was competitive (more complex clauses were not in relation to greater accuracy) (Tilma 2014: 164). Evidence from studies conducted in cross-sectional settings suggests that complexity is a precursor for accuracy (i.e., they are in a conditional relationship). In other words, a certain level of complexity needs to be achieved before accuracy can develop (Martin, Mustonen, Reiman & Seilonen 2010; see also the summary of the Topling and Cefling projects, Lesonen 2013). In this respect, the findings of cross-sectional (Cefling) and longitudinal (Spoelman & Verspoor 2010; Tilma 2014) studies are not in line with each other: generalizing from the group to the individual seems to be problematic.

Regarding the variability patterns, both Tilma's (2014) and Spoelman and Verspoor's (2010) findings point to higher variability in the early stages of learning. Tilma (2014: 145) showed that one learner's accuracy in both use and forms of cases exhibited more variability initially, but later on the variability of these measures decreased. Moreover, some learners showed peaks in one complexity measure - the use of cases - suggesting that overuse (i.e., high variability) might serve as a way to

acquire something new (see Tilma 2014: 93). Also Spoelman and Verspoor (2010: 540–541) found that variability in case accuracy (all case errors taken together) decreases over time: the learner language system stabilized in this respect around the middle of the data collection period. Also the complexity measures (word complexity, NP complexity, and sentence complexity) showed a steady bandwidth towards the end of the period of observation, pointing to a relatively stable system (Spoelman & Verspoor 2010: 547). These findings suggest that variability is a functional property of a developing system: when new things are learned and tried out, the system can temporarily be shaky, but later on, as more target-like ways of expressing meanings are found, the system stabilizes.

Spoelman and Verspoor's (2010) and Tilma's (2014) studies explicitly adopt the Dynamic Systems Theory view. Contrary to the present study, the starting point of the investigation in those studies was structural features of the learner language: complexity and accuracy measures. The current study starts the investigation from meaning: interaction, variability and abstractness are investigated in the expression of two meanings, namely evaluation and existentiality. L2 Finnish learners' expressions of evaluation have not been studied earlier, but L2 Finnish learners' existential constructions have been studied by Kajander (2013) and Ivaska (2010, 2011). Some findings of Kajander's dissertation as well as Ivaska's studies deserve our further attention here.

Kajander's (2013) findings show that the three different types of existential construction - location-themed, possessor-themed, and others with neither of these themes - were used more or less equally at the different CEFR levels: no type could be used as an indicator of a certain proficiency level. Besides frequency, Kajander (2013) also studied the accuracy of the constructions. Accuracy rates for the different elements of the existential constructions were calculated (accurate forms/all forms*100). Kajander's (2013) results show that 80% accuracy for the predicate and for the case marking of the locative was reached at the A2 level. For the subject, 80% accuracy was reached later, at the B1 level. These findings show that the form of the subject in the existential construction can be problematic for L2 learners. The form of the subject in the existential construction (and the impact of instruction on it) is investigated in the fourth research question of the present study.

Kajander (2013) utilizes the concept of construction in his study, although it is not strictly applied in the analysis. However, in Kajander's study, language learning is viewed as learning units that are larger than words, and therefore Kajander's study comes close to usage-based views of language learning. The units of interest in Kajander's study are expressions of existentiality: that something exists, starts to exist, or stops existing. Kajander shows in his definition of the existential sentence that the form and meaning of an expression are intertwined. He points out that the main aim of his study is to describe how L2 Finnish learners use sentences in which alternation of the form of the subject (nominative or partitive) is possible; in the Finnish language, these constructions have an existential meaning. (Kajander 2013: 13–14.) All three different types of existential construction are included in Kajander's analysis (location-themed, possessor-themed, and others), so the starting point of Kajander's study was different from the starting point of the current study: there,

formal aspects were emphasized in the process of data selection. However, regardless of this difference in the data selection, Kajander identifies similar kinds of constructions in the developing L2 to those found in this study, especially with regard to location-themed constructions.

Ivaska (2010) focuses on the form of the subject in the existential construction in an advanced L2 learners' corpus. Ivaska (2010) shows that the nominative form of the subject is more frequent in the L2 speakers' corpus than in an L1 speakers' corpus, which can partly be explained by L2 speakers' non-idiomatic use of the subject. According to Ivaska (2010), this overuse of the nominative case is related to processes of analogy: based on previous encounters with the nominative form of the subject in other types of constructions, the L2 learner may overgeneralize the nominative form for the subject in the existential construction as well. Besides a group level analysis, Ivaska (2010) also traced two learners' use of existential constructions over one year. For one learner, there was a decrease in the use of the nominative subject and increase in the use of the partitive subject over time. The non-idiomatic use of the subject could be detected only after the learner started to use the partitive form; sometimes a decrease in idiomatic language use may actually be a sign of greater language proficiency. Ivaska refers to Ellis (1985: 95-96) in his discussion of this finding: in some phases of learning, the learner language may be idiomatic but it can lack a particular function of the target language. This could be the case for the learner in Ivaska's study. In another study, Ivaska (2011) shows that L2 Finnish learners might have difficulty not only with a non-idiomatic use of the subject in the existential construction but also with the congruence of the verb and the word order (Ivaska 2011). The idiomatic, or target-like use of the Finnish existential construction is touched upon with the fourth research question of this study.

As mentioned earlier in this section, L2 Finnish development has not been studied extensively in the theoretical framework of Complex Dynamic Systems. Usage-based approaches on the other hand have been adopted in a number of studies, and these studies form a firm basis for a dynamic usage-based study on L2 Finnish learning. For example Honko's (2013) longitudinal study on lexical development, Mustonen's (2015) cross-sectional investigation of the use of local cases, Ivaska's (2015) corpus study on very advanced learners' constructions, Seilonen's (2013) cross-sectional study on L2 Finnish learners' impersonal constructions, and Reiman's (2011a; 2011b) cross-sectional investigations of L2 Finnish learners' transitive constructions are based on usage-based assumptions on language learning.

In the context of L2 Finnish, the usage-based view is present not only in research but also in language education, since functional L2 pedagogy, which is strongly based on the idea of learning in social interaction (Aalto et al. 2009), is nowadays widely accepted - at least in principle - by L2 Finnish teachers and educators. The participants in this study were learning Finnish in an instructional setting in which functional L2 pedagogy was used. Let us now look more closely at the participants and the instructional setting, the data collection, and the methods of data analysis.

4 DATA AND METHODOLOGY

This section presents the data and the methodology of this study. In Section 4.1, the four participants and their language proficiency at the beginning and at the end of the data collection are described. In Section 4.2, the process of data collection is presented. This section includes descriptions of the longitudinal data collection and the instructional setting in which the four participants were learning L2 Finnish. In addition, it provides information about the researcher's double role during the data collection. Section 4.3 presents the data selection approach applied in this study, namely the onomasiological approach. Finally, in Section 4.4, the methods of data analysis are described. First, this section focuses on the creation of one written and spoken corpus as well as the data categorization and normalization. After that, the data analysis methods are presented in relation to four research questions: Sections 4.4.3 – 4.4.5 present how interaction, variability and the effect of instruction are analysed in the current study.

4.1 The four cases

In this study, the L2 Finnish development of four university students is traced over a period of nine months. To secure the longitudinal data collection, data were first collected from about 20 students. The participants in this study are the only students who took all three of the consecutive Finnish language courses during the 9-month period. The participants were informed about the aims of the study - to trace the L2 Finnish development of university students learning Finnish in an instructional setting - and it was made clear to them that participation was voluntary and they could withdraw from the study at any time. Before the data collection started, all of the participants signed a consent form in which they gave permission for the use of their writing and speaking samples for the purposes of this study. Table 2 presents background information about the four learners. Pseudonyms chosen by the participants themselves are used.

Table 2 Background information of the participants

Participant	Age	L1	Other languages	Time of residence before the study	Explicit instruction before the study
Lena	23	German	English,[1] [2] French,[1] Icelandic[1] [2]	0	0
Jungo	22	Chinese (Hunanese)	Mandarin Chinese,[1] English[1]	2 years	1 Finnish course of 5 ETCS, 20 hours of self study
Alvaro	30	Spanish	English,[1] French,[1] [2] Russian[1]	0	0
Khadiza	31	Bangla	English,[1] Hindi, Urdu	4 years	0

[1] Learned in an instructional setting. [2] Learned in a target-language-speaking community.

The participants had different first languages, and they had all learned additional languages before moving to Finland. Lena and Alvaro moved to Finland just before the data collection started. They had had no previous exposure to Finnish but they both had prior experience of learning another language in the target language community. Jungo had been in Finland for approximately two years, and Khadiza approximately four years before the study. These two learners had therefore already been exposed to some Finnish. Jungo had also taken one course of Finnish at a different educational institution. At the time of the study, all of the participants were studying at the same Finnish university; Lena and Alvaro were studying in an exchange program, and Jungo and Khadiza in an international master's program. Their other studies, apart from the Finnish courses, were provided in English. At the time of the study, the four learners were studying Finnish in the same Finnish language courses. These courses are described in more detail in Section 4.2.2.

Because of the differences in length of residence before the data collection, it was expected that the learners' language proficiency might be different at the beginning of the study. For this reason, three experienced raters who were L1 speakers of Finnish were recruited to evaluated the learners' first and last three written texts. The length of these texts ranged between 40 and 176 words (average 104 words). The criteria of the Finnish National Certificates of Language Proficiency testing were used (University of Jyväskylä, Center for Applied Language Studies and the Finnish National Agency for Education). This rating system has a scale from 1 to 6, 1 being the lowest and 6 the highest level. These levels correspond to levels A1 - C2 in the European Framework of Reference for Languages (Common European Framework of Reference for Languages, Council of Europe, 2001). The range and the median for each learners' texts 1 – 3, as well as the range and median for these texts together, are shown in Table 3.

Table 3 Participants' L2 writing proficiency at the beginning of the study

	Text 1		Text 2		Text 3		Texts 1-3 together	
	Range	Median	Range	Median	Range	Median	Range	Median
Lena	1	1	1	1	2–3	3	1–3	1
Jungo	1–2	2	1–2	2	2–3	2	1–3	2
Alvaro	1	1	1–2	1	2–3	3	1–3	1
Khadiza	1–2	2	1–2	2	2–3	2	1–3	2

The median ratings for Khadiza and Jungo were higher than those for Lena and Alvaro for Text 1. However, by Text 3, which was written in week 5, Lena and Alvaro had caught up with Khadiza and Jungo. As shown in the third column, the median of the ratings for Text 3 was in fact higher for Lena and Alvaro than it was for Khadiza and Jungo. These ratings show that the initial differences in the learners' language proficiency leveled out quite quickly at the beginning of the study. This could be explained by the fact that even though Jungo and Khadiza had some basic knowledge of Finnish at the beginning of the study, as shown by the higher ratings they got for the first text, their language proficiency was not very high and the other learners could quickly catch up with them. Low L2 proficiency regardless of a relatively long period of residence may be due to the fact that many L2 learners both inside and outside of a university environment do not become full members of the target-language-speaking community and therefore do not build up the necessary social network to develop their language skills (Latomaa, Pöyhönen, Suni & Tarnanen 2013).

The participants' writing proficiency was also evaluated at the end of the study by the same experienced raters using the same criteria. The results are shown in Table 4.

Table 4 Participants' writing proficiency at the end of the study

	Text 31		Text 33		Text 35		Texts 31-35 together	
	Range	Median	Range	Median	Range	Median	Range	Median
Lena	2-3	3	2-3	3	2-3	3	2-3	3
Jungo	2-3	3	2-3	3	2	2	2-3	2
Alvaro	2-3	2	2-3	2	2	2	2-3	2
Khadiza	2-3	2	2	2	2	2	2-3	2

Table 4 shows that the writing proficiency of all of the participants improved during the nine-month period. None of their last three texts was evaluated at level 1 anymore. According to these evaluations, Lena seems to have acquired the highest proficiency. This was also evident in the grades of the last Finnish course: on a 5-point scale, Lena's grade was 3 while it was 2 for the other participants. These grades were based on four tests in reading, speaking, listening, and grammar and

vocabulary. As far as writing proficiency is concerned (see Table 4), it seems that Jungo scored more than Alvaro and Khadiza because Jungo got higher evaluations for Texts 31 and 33 than did the other two learners. It could be concluded that Lena achieved the highest proficiency, Jungo the second highest proficiency, and Alvaro and Khadiza were rather similar to each other, with a slightly lower writing proficiency than the other two.

Because the aim of this study was to investigate what kind of constructions are used to express a certain meaning and how the participants developed these constructions over time, the most important criteria in the selection of participants was their willingness and availability to participate in the frequent, longitudinal data collection. Therefore the study setting did not allow - and did not aim for - full control of the different background variables of the participants. In other words, the research setting was not experimental in nature, so having a homogeneous group of participants, for example in terms of language background, was not the aim.

4.2 Data collection

4.2.1 Longitudinal data collection

In a dynamic usage-based (DUB) approach, the focus of research is on the process of learning. In this approach, researchers aim to describe how the L2 development takes place, and to do this, a longitudinal, case-study, time-series approach is considered an appropriate methodology (Larsen-Freeman & Cameron 2008: 245). Every usage event is important in the course of development because the learner language system changes every time the learner uses the language for the purposes of interaction (see e.g. Larsen-Freeman & Cameron 2008; de Bot, Verspoor & Lowie 2005). For example, the development of the abstractness of constructions, discussed in Section 2.1.3, is strongly dependent on the usage events that the learner encounters: abstract L2 patterns emerge from the use of lexically specific constructions (see e.g. Eskildsen 2009, 2012; Mellow 2006). Consequently, to trace changes in the developing L2, dense data collection with individual learners is necessary. Choosing an appropriate sampling interval and period of observation is crucial and depends on the phenomenon of interest and its rate of change (see Larsen-Freeman & Cameron 2008: 245).

In this study, the data were collected weekly over a period of nine months, which called for considerable commitment on the part of the participants. Both written and spoken data were collected, in alternate weeks. The decision to collect both written and spoken data was made because it was desirable that the points of data collection reflect the variable situations in which L2 learners may use the language in social interaction in real life (see more about the creation of one corpus in 4.4.1). The total amount of data points ranges between 28 and 35. The number of data points is shown in Table 5.

Table 5 Number of points of data collection

	number of points of data collection	written data	spoken data
Lena	35	17	18
Jungo	35	18	17
Alvaro	33	16	17
Khadiza	28	16	12

The written data are hand-written and were produced either during the contact lessons, in the first five months, or, in the last four months, in the participants' free time. During the lessons, there was a time limit of approximately 20 minutes; texts written outside the lesson were written without a time limit. In both cases, the texts were produced under supervision, and the participants were not allowed to use any supporting material, e.g. a dictionary. The writing samples are 99 words long on average, the length ranging from 40 to 176 words. The length of the written texts for each learner is shown in Table 6.

Table 6 Number of words in the written data

	Total number of words in the written data	Mean number of words in the written data	Range of the number of words in the written data
Lena	2004	118	136 (40–176)
Jungo	1411	78	78 (46–124)
Alvaro	1571	98	79 (59–138)
Khadiza	1604	100	105 (47–152)

The spoken data were collected in a similar manner, in the first five months during the class and in the last four months in the participants' free time. This was done in a language studio with a recorder (Roland R-05, file format mp3) or with an iPad (file format MOV); with Lena, a smart phone was used once. With Alvaro, data were twice recorded during a Skype conversation. There are both dialogues and monologues in the spoken corpus. The speaking partner in the dialogues was either another L2 speaker (another participant in the study or another student from the class) or an L1 Finnish speaker (the researcher, (another) Finnish language teacher, or a research assistant). Like with the written data collection, participants were not allowed to use any supporting material during the data collection, but they were supported as in natural communication if they were searching for expressions. The speaking samples are on average 259 words long (range 63–629 words). The length of the spoken texts is shown in Table 7.

Table 7 Number of words in the spoken data

	Total number of words in the spoken data	Mean number of words in the spoken data	Range of the number of words in the spoken data
Lena	5051	281	566 (63–629)
Jungo	3253	191	316 (67–383)
Alvaro	5451	321	434 (84–518)
Khadiza	2913	243	339 (120–459)

The data are free response data: the participants were asked to write or speak about a given topic. The topics were chosen in accordance with the participants' language proficiency. They were sometimes familiar topics from classroom activities, like 'What did you do during the Christmas holiday' and 'Describe the person in the picture'. All of the tasks used in the data collection are given in Appendix 2. The tasks were given in both Finnish and English at the beginning of the data collection, and only in Finnish towards the end of the data collection.

The participants were not recompensed or rewarded in any way for their participation, although the researcher sometimes gave them feedback on the written and spoken data samples in one-to-one feedback sessions.

After the data collection, the data were transcribed in Word. For the spoken data, the CHAT (Codes for Human Analysis of Transcripts) format of the Child Language Data Exchange System was followed to the extent necessary for the analysis of the current study (e.g. overlaps were not transcribed). These transcripts as well as the audio files (mp3 and MOV) are saved in a network drive of the University of Jyväskylä and protected with a password, and the handwritten data are kept in a locked closet at the same university. The data were collected only for the purposes of this study. However, as the data have proved valuable, seeking participants' permission for the use of their data in future studies is currently under consideration.

For the purposes of this study, a very small-scale control study with L1 speakers of Finnish was conducted to see what linguistic means L1 speakers use to express evaluation. After signing a consent form, a total of 14 L1 Finnish university students wrote a text for 3 of the 18 original writing assignments (three tasks slightly modified). The three tasks were assigned randomly. All of the texts were scrutinized by the researcher using the same criteria as for the learner data (see Section: 4.3). All of the evaluative constructions (in total 125) were selected for the analysis.

4.2.2 Instructional setting

The participants in this study were learning Finnish in an instructional setting. They took the same three Finnish courses during the 9-month period of observation. These courses were at levels A1, A2, and B1 in the European Framework of Reference for Languages (Common European Framework of Reference for Languages, Council of

Europe, 2001) and the courses were provided by the language center of the university where the participants were studying. The course material was also provided by this institution. Each course consisted of 70 contact lessons (of 45 minutes each) and independent work. The participants received a total of 15 ECTS for completing the courses. The first course was an intensive course of almost four weeks: approximately 5 contact lessons were taught 5 days a week. The second and third courses were taught 3 times a week, with 2 contact lessons each time.

The three language courses aimed to develop learners' skills in four different areas: social interaction, telling and describing, understanding and searching for information, and developing as a language learner. The medium of instruction was Finnish and English during the first five months, and Finnish alone during the last four months. When Finnish was used, the teacher used mainly colloquial spoken Finnish. Both colloquial and standard varieties were used in the learning material, so the students were exposed to both. Students were expected to be able to start distinguishing between these varieties in their own production in the course at B1 level.

The teaching approach was primarily meaning focused: principles of functional L2 pedagogy were applied. This kind of pedagogy emphasizes the social function of language in learning. The language is learned in and for the purposes of interaction and the focus is on how meanings are conveyed in the target language. Grammar rules are not a focus; patterns and analogies are derived from usage events both inside and outside the classroom. Occasionally, the students' attention may be drawn to formal aspects of language, but before that learners will have been exposed to the target structure in authentic contexts, and learners are also engaged in the process of analyzing the structures and their functions. (For a summary of functional L2 pedagogy, see Aalto, Mustonen & Tukia 2009; Mitchell, Myles & Marsden 2013: 188-219.)

There were two different teachers of the courses, both L1 speakers of Finnish. The researcher taught the first and second courses (levels A1 and A2), and a colleague of hers taught the third one (level B1). During the first two courses, the researcher wrote a diary about the classes after every lesson. In the diary, she wrote down what was taught, what learning materials were used, and what kinds of activities were carried out. When an electronic screen was used, these notes were also saved in the diary. A record was also kept when the students' questions were discussed with the whole group. In the third course, given by a colleague, the researcher observed the lessons and kept a diary covering the same matters. Occasionally the researcher participated in the learning activities, e.g. in group discussions. The students were told that the researcher would be observing the lessons. Issues concerning the researcher's position are discussed in Section 4.2.3.

Because the fourth research question of this study concerns the interaction of instruction with the learners' developmental trajectories in expressing existentiality, the instruction on this theme needs to be described here in more detail. The Finnish existential construction was the focus of attention in class twice during the period of observation. Before the first pedagogical intervention the Finnish existential constructions was presented in total of 45 times in different forms and contexts in the

learning material. The first pedagogical intervention took place in weeks 15 and 16, and the second, main one in weeks 28 and 29. The timing of these pedagogical interventions is shown in Figure 9. The focus of the interventions, the activities in class as well as the type frequency of the existential construction in the learning material and on the board are presented in Table 8.

In weeks 15 and 16, the students' attention was drawn to the Finnish existential construction for the first time. However, in these lessons, the focus was not on the construction but on the use of the partitive case: the existential construction was presented as one context where the partitive case is used. It was also mentioned that it corresponds to the English *there is/there are* construction. The main pedagogical intervention in weeks 28 and 29 explicitly focused on the existential construction. During these sessions, the different elements of the construction and their forms and functions were taught explicitly. Especially the form of the subject was discussed. The first pedagogical intervention was taught by the researcher, the second by her colleague.

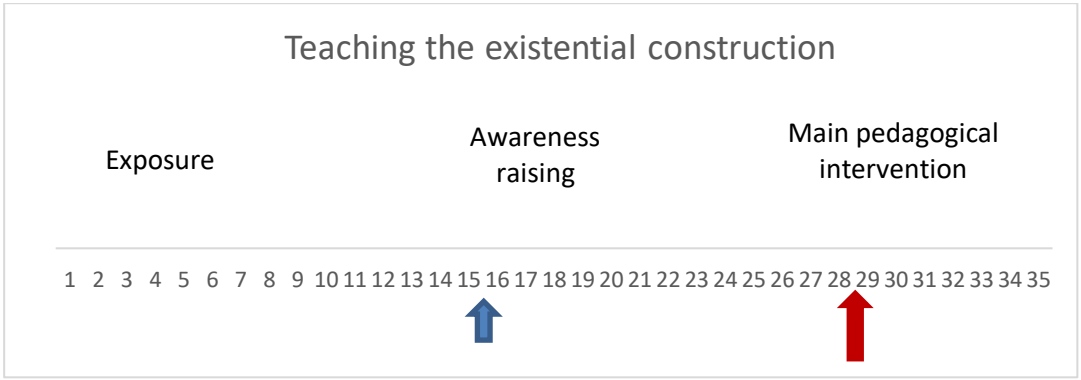


Figure 9 Teaching the existential construction: timing of the pedagogical interventions

Table 8 Instructional setting: the existential construction

Week	Activity in class	What was said about the e-construction?	Type frequency of the Finnish existential construction in the learning material and on the board
15	Grammar session: when to use the partitive case	1) in a *there is/there are* construction, the partitive case is sometimes required 2) the Finnish existential construction corresponds to the *there is/there are* construction in English	2

16	Grammar session: when to use the partitive plural Written exercise: use the correct form of the subject in the given e-construction	1) in the Finnish existential construction, which corresponds to the *there is/there are* construction in English, the partitive plural is sometimes required -	9 13
28	Grammar session: the existential construction as an important sentence type in Finnish (analysis of the different sentence types in students' own texts) Speaking exercise: Describe your home city (the use of existential constructions is expected)	1) The elements of the e-construction: missä? + verbi + mikä? / mitä ? where? + verb + what? -	1 7

29	Grammar session: the Finnish existential construction	1) The e-construction is similar to the possessive construction 2) The e-construction tells us that there is something somewhere (something exists), it introduces a new thing 3) The e-construction is a typical Finnish construction 4) Elements of the e-construction: missä? + verbi + mikä? / mitä? where? + verb + what? mistä? + verbi + mikä? / mitä? where from? + verb + what? mihin? + verbi + mikä? / mitä? where to? + verb + what? 5) there is no object in the e-construction 6) the verb is in the third person singular, it is most often the verb olla 'to be' 7) the situations in which the partitive (singular/plural) is used were discussed	10
	Writing exercise (fill in the gaps)	1) Elements of the e-construction	13

The impact of instruction has been studied widely in the field of L2 learning. Many studies have focused on groups of learners by using a pre-test and post-test design (for a research synthesis and meta-analysis of the effect of instructional treatments, see Norris & Ortega 2000; Spada & Tomita 2010). These studies have contributed to our understanding of general trends in L2 learning and the impact of teaching on it and they have given us valuable information on how a pedagogical intervention can affect the development of groups of learners. However, the findings in this area are inconsistent. Some studies show that explicit instruction is more effective than implicit instruction (Norris & Ortega 2000; Spada & Tomita 2010), while other studies show that a mainly implicit program is more effective (Rousse-Malpat 2019). In the current study, the learners' development is traced longitudinally during their participation in an instructed L2 learning program. This kind of setting has the advantage that it allows the investigation of the impact of pedagogical interventions on individual learners' trajectories.

4.2.3 Researcher's position

As the researcher was the teacher of the first two language courses taken by the participants (the first five months of the study), she had direct access to the contents of teaching and their sequence, the learning materials, and learning activities. This was especially useful for the fourth research question of this study, which investigates the interaction between the learners' trajectories and instruction. All of the information acquired as the teacher was helpful in pinpointing the connections between the changes in the participants' language and the instruction. Observing the lessons during the last four months of the study was also helpful in this respect.

In addition, teaching made it possible to get to know the participants and to build a trusting relationship with them, which is advantageous for both parties in longitudinal data collection. The double role helped the researcher to get a better picture of the participants' language development. Knowing the participants was particularly useful, for example, when the data were transcribed and the meaning of the learners' utterances needed interpretation. An inevitable risk is that since the teacher-student relationship is never equal because of the dominant role of the teacher, participants might feel obliged to continue the data collection despite wishing to withdraw. It was made clear, however, that participating in the research was entirely voluntary and not a part of the courses.

The specific research questions of this study were formulated only after the data collection period had finished. Similarly, the constructions for analysis were chosen and the analysis was done after the data collection. Therefore, conducting the research did not affect the teaching, which is important for the reliability of the study. Moreover, conducting the analysis only after the courses were finished meant that the risk of flawed interpretations of the participants' learning gains or the effect of teaching could be minimized.

4.3 Data selection: the onomasiological approach

In this study, an onomasiological approach was applied for the data selection. The term onomasiology refers to a process proceeding from notion to name. The opposite process, typical in dictionaries, goes from name to notion (Malmkjær 1991: 291). In other words, the onomasiological approach searches for the formal verbalizations that are used to express a certain meaning (Grzega 2012). This approach emphasizes the cognitive-semantic component of language and gives primacy to extra-linguistic reality when things are named (Fernández-Domínguez 2019). When applying the onomasiological approach in an L2 learning study, the investigation of language development begins from the meaning pole of the construction: all of the constructions that are used to express a targeted meaning are included. After that, the learners' development in the use of these expressions is studied. For example, in this study, to find out how L2 learners develop their ability to express existentiality, all of the constructions that were used to express this meaning were selected from the

data (see Figure 10). These included target-like and non-target-like constructions. Such an approach stands in contrast to an approach that starts from the form. In such an approach, the targeted construction is defined first; for example, a researcher would decide that all constructions that formally fulfill the requirements of the Finnish existential construction (see VISK § 893) will be included in the analysis. These two different kinds of approaches are visualized in Figures 10 and 11.

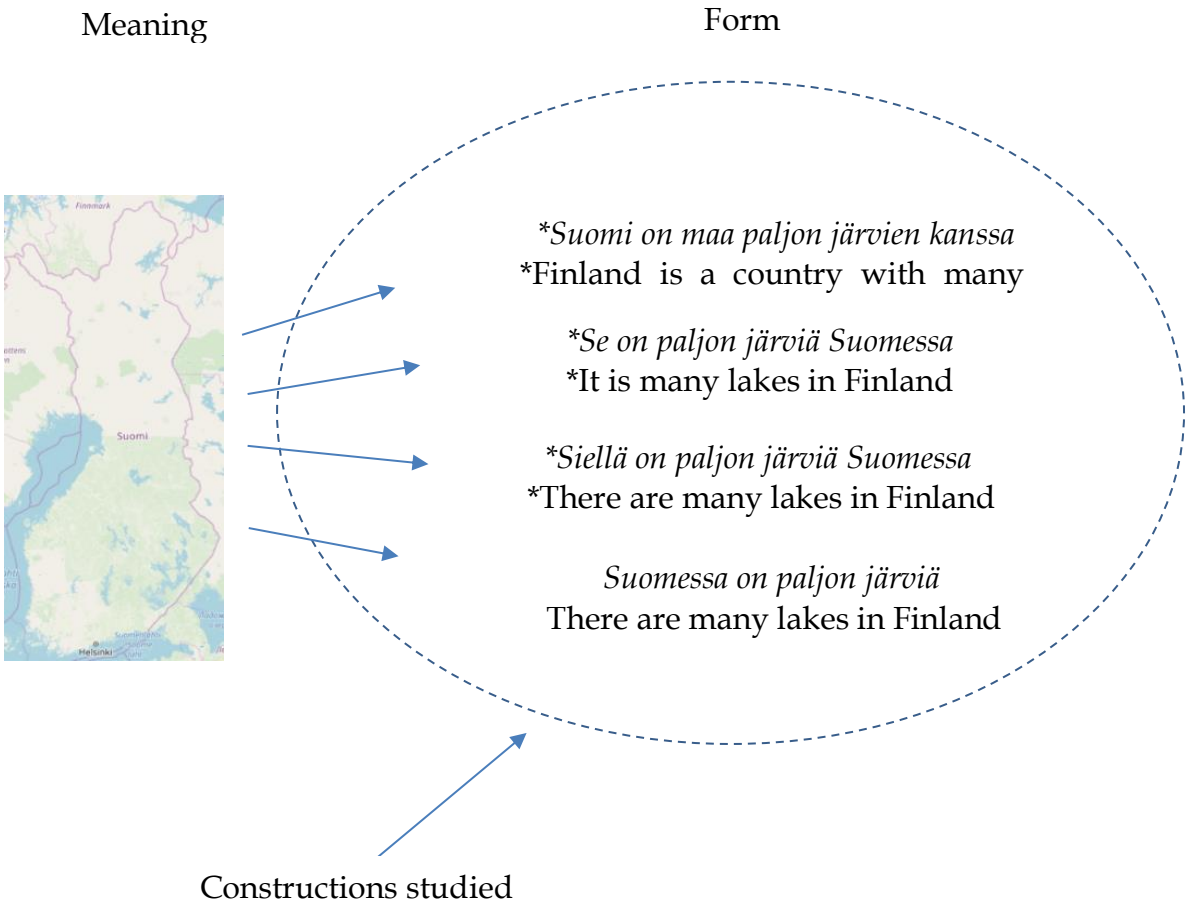


Figure 10 Onomasiological approach: starting the investigation of L2 development from the meaning[12]

[12] Map © OpenStreetMap contributors, map data available under the Open Database License (www.opendatacommons.org/licenses/odbl) from www.openstreetmap.org

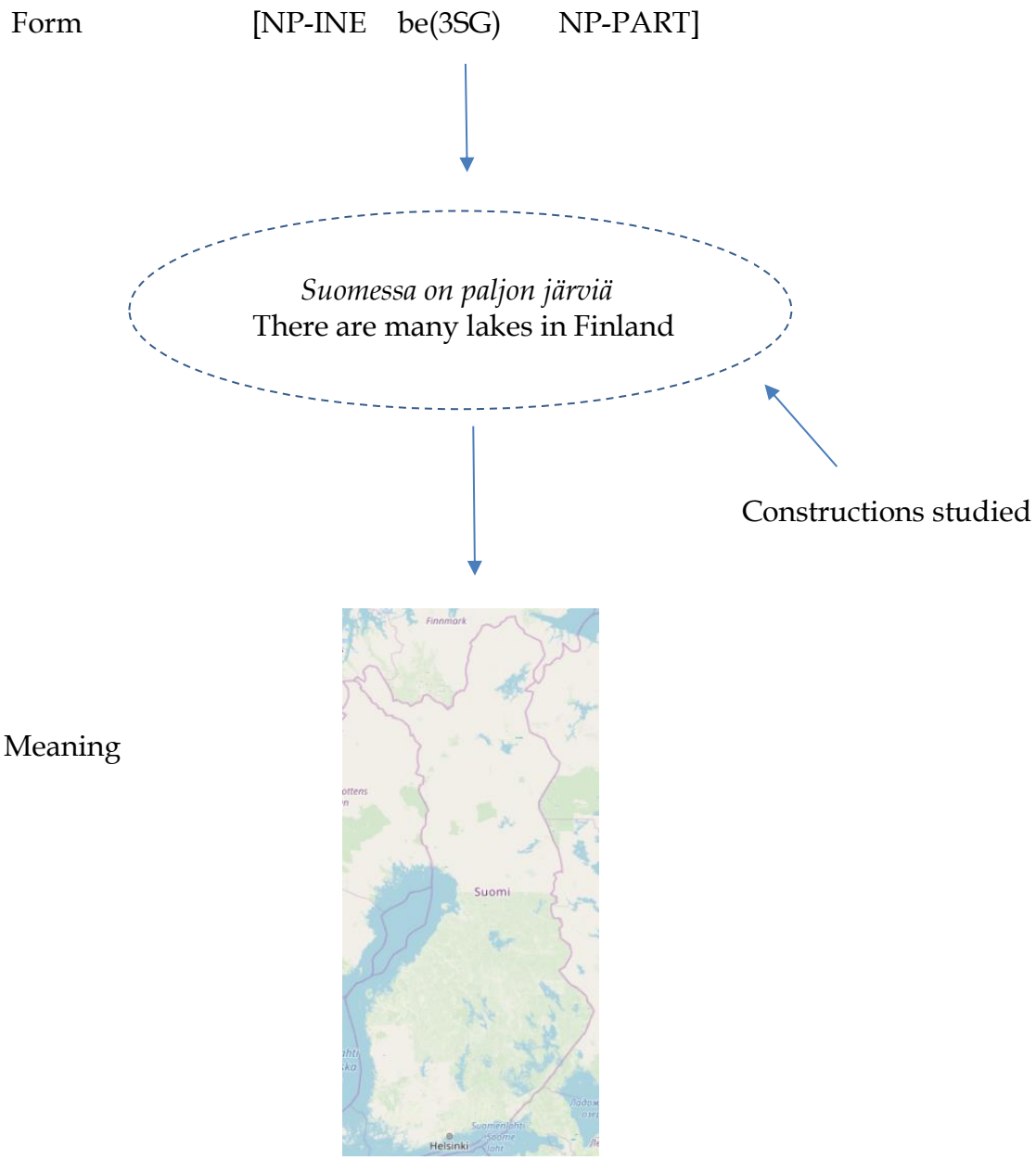


Figure 11 Starting the investigation from the form[13]

These two different approaches each have their own advantages and disadvantages. A clear advantage of the onomasiological approach applied in this study is that it emphasizes meaning making as a central function of language (Fernández-Domínguez 2019). Also, by using this approach, it is possible to get closer to learners' communicative needs. Another advantage is that non-target-like

[13] Map © OpenStreetMap contributors, map data available under the Open Database License (www.opendatacommons.org/licenses/odbl) from www.openstreetmap.org

learner language constructions that do not fulfill the requirements of target-like constructions are included in the analysis. If, in contrast, strict requirements are set for the form of the targeted construction, unconventional and non-target-like learner language constructions are excluded.

The disadvantages of the onomasiological approach are encountered in the interpretation of meanings. The meanings of expressions are sometimes heavily context- and speaker dependent, and the selection process can become complicated when there are no clear requirements for inclusion. Especially where learner language is concerned, and expressions are not conventionalized, it is sometimes difficult to interpret what the learner means. For example, the meaning of an expression (*Menen bussilla,) koska se on *halpo*[14] '(I take the bus,) because it is *cheap/*easy' is difficult to interpret because the word *halpo* is not a Finnish word; it resembles the words *halpa* 'cheap' and *helppo* 'easy', but even when one knows the context, it is difficult to know which of those (if either) the learner means to use. When starting from the form, this kind of problem does not arise. Another disadvantage of the onomasiological approach is that to apply it, every utterance in the data set needs to be coded manually for its meaning. This is time-consuming and therefore the application of this approach to very big data sets is unrealistic.

While the onomasiological approach has not been applied extensively nor, when applied, has it usually been explicitly named as such, the principles of the approach are not new. Already in 1978, Cancino, Rosansky, and Schuman investigated the kinds of linguistic forms that L2 learners use to express negation (for a discussion of this study, see Section 2.3.2). This approach has also been used, for example, in the study of alternating constructions (Pijpops & Speelman 2017; Belligh 2019). Alternating constructions fulfill similar functions, and when they are searched for, it is necessary to start from the meaning. For example, the same meaning, 'Elizabeth annoys John', can be expressed with two structurally different Dutch constructions, *Elizabeth ergert John* and *John ergert zich aan Elizabeth*: these constructions are hence alternating constructions (Pijpops & Speelman 2017).

A functionalist perspective on language learning is also concerned with the ways that L2 learners make meaning (Mitchell, Myles & Marsden 2013). Several studies have been conducted following this tradition, which sees the pragmatic communicative needs of learners as central (see e.g. Dittmar 1984; Sato 1990; Perdue & Klein 1993). One example is a study by Bardovi-Harlig (2000), who studied the time expressions of L2 learners. Bardovi-Harlig (2000) concluded that learners go through three successive stages when learning to talk about time. These stages are 1) the pragmatic stage (with a reliance on e.g. chronological order and inference from the context), 2) the lexical stage (e.g. the use of temporal and locative adverbials and calendric references), and 3) the morphological stage (the use of tense and aspect).

Usage-based assumptions about L2 development have also been tested by starting from the meaning. Eskildsen (2012) shows that some L2 constructions used to express negation (both target-like and non-target-like) develop from item-based expressions. In the context of L2 Finnish learning, Mustonen (2015: 121) has

[14] This utterance was produced by Khadiza

investigated the linguistic means young L2 Finnish learners at different proficiency levels use to express e.g. location and circumstances. In sum, starting the investigation from meaning is not entirely new in L2 developmental studies, even though the onomasiological approach as a data selection method has not been explicitly named in these studies. This study contributes to L2 developmental research by investigating the linguistic forms L2 Finnish learners use to express evaluation and existentiality. Using this approach, this study also aims to shed new light on the development of an L2 because with this approach it is possible to reveal learner language constructions. Little attention has been paid to them in most previous research, where aspects of form have been the starting point of the analysis.

Data selection procedure. Before selecting the data for the analysis, the data set of one learner (Lena) was coded in CLAN (Computerized Language Analysis, in CHILDES: Child Language Data Exchange System, see MacWhinney 1991) for the meanings that the expressions convey. The annotation include codes like 'drinking/eating' (*Martin juo* 'Martin drinks'), 'having a family' (**Henällä on kaks *velijä* 'She has two brothers'), 'possibility' (*kotona voi olla pyjamassa* 'You can wear pyjamas at home'), 'time' (*Tänään on *torstaina* 'It's Thursday today'), 'evaluation' (*Mä *pidan kalasta* 'I like fish'), and 'existentiality' (*Huoneessa on paljon *hommaita* 'There are many things in the room'). It transpired that expressions of evaluation were frequent in Lena's set, which led on to the assumption that expressing this meaning was particularly relevant for her (for the importance of evaluative expressions in language, see also Alba-Juez and Thompson (2014: 5)). On these grounds, these expressions were selected for analysis (Substudies 1, 2, and 3). Expressions of existentiality (Substudy 4) were selected for different reasons. Especially Lena's initial use of these expressions gave interesting insights into her communicative needs in relation to her L2 repertoire: the existential meaning was expressed with creative, unconventional constructions before the conventional construction emerges. On these grounds, the decision was made to analyze these expressions. It was also assumed that these two central meanings provide fruitful material for comparison because they are different in terms of the number of different kinds of constructions that are conventionally used to express them: evaluation can be expressed with several different types of constructions while existentiality is expressed with only one construction.

The two meanings, evaluation and existentiality, were defined carefully for the purposes of data selection. Evaluative language was defined in line with Alba-Juez and Thompson (2014: 13) who define evaluation as

> a dynamical subsystem of language, permeating all linguistic levels and involving the expression of the speaker's or writer's attitude or stance towards, viewpoint on, or feelings about the entities and propositions the s/he is talking about(.)[15]

Alba-Juez and Thompson (2014) point out - in line with CDST assumptions - that evaluative language can be seen as a subsystem of language. This subsystem can then further be divided into smaller subsystems, like different types of constructions

[15] Alba-Juez & Thompson 2014: 13

expressing evaluation (see Section 4.4.2). In the present study, evaluations were expressed almost exclusively at the lexical level. In the data of this study, expressions of evaluation include expressions like:

Mut se oli kiva 'But it was nice' (attitude or stance towards/view point on entity)
Tykkään Pink Floydista 'I like Pink Floyd' (attitude or stance towards/view point on entity)
Mua ärsyttää kaikki 'I'm annoyed by everything' (feeling about entity)
*He ovat *tärkeä mun elämässä* 'They are important in my life' (attitude or stance towards/view point on entity)
**Siita minua piristää* 'That cheers me up' (feeling about entity)
*Ajattelen mun mielestä se on hyvä *idia* 'I think it's a good idea' (attitude or stance towards/view point on proposition)

Interrogatives are included in the analysis, but simple yes/no statements are excluded.

To validate the selection of evaluative expressions, Lena's evaluative expressions - in their original contexts in written tasks - were given to a panel consisting of three L1 speakers of Finnish. They were asked to judge whether or not Lena's expressions were evaluations. The panel disagreed on the selection of only a very few expressions, and these were excluded from the analysis. Extrapolating from these judgements, Lena's spoken data were scrutinized again. The data selection of the other participants' data was conducted on the basis of Lena's data. In the case of a few problematic utterances, the Finnish-speaking panel of three was consulted.

Expressions of existentiality were defined in line with Ikola (1954). As pointed out in Section 3.3, according to Ikola (1954), a sentence is an existential sentence if it tells one of the following things about a certain place or state: 1) what is present in the place or state, as in Example 39, 2) what is going to be present in the place or state, or 3) what has stopped being present in the place or state.

(39) *Elokuva-ssa o-n mies ja nainen.*[16]
Film-INE be-3SG man and woman
'There is a man and a woman in the film.'

The majority of expressions used by the participants in this study fall into the first category: the learner constructions often express the idea that there is something somewhere.

[16] This utterance was produced by one participant in this study, Lena

4.4 Data analysis

4.4.1 Creating one written and spoken corpus

Both spoken and written data were collected with the four participants because it was desirable that the points of data collection reflect the variable situations in which L2 learners may use the language for the purposes of interaction in real life. For the data analysis, the spoken and written data were merged to create only one corpus. This way it was possible to create a data set that consists of around 25 data points instead of around 15 data points per learner (see Table 5 for number of data points). Moreover, by merging the spoken and written data, the interval for the data collection was one week instead of two weeks.

Collapsing the two different kinds of data sets needed to be done with caution because spoken and written language may be quite different from each other (see Section 3.1 for differences between standard and colloquial Finnish). For example sentence complexity has shown to be different in spoken and written language (Lintunen & Mäkilä 2014). In this study, the unit of analysis is the construction that the learner uses to express evaluation and existentiality, and these constructions are to a great extent similar in spoken and in written Finnish, and therefore it was not expected that the learners would use different types of constructions in one mode vs. the other.

Although similar kinds of constructions were expected to emerge both in written and spoken data, their frequencies in different modes could have been different. When quantitative analysis was used with the first research question and the first part of the second research question that investigate the interaction and variability patterns in the expressions of evaluation, it was important to make sure that the frequencies of the constructions are not very different in these two modes. The two types of data were therefore compared. The descriptive statistics (mean, standard deviation, and median) are shown in Table 9.

Table 9 Normalized frequencies of evaluative constructions in written and spoken data: mean, standard deviation, and median

	M		SD		Median	
	written	spoken	written	spoken	written	spoken
Lena	3.92	2.84	2.39	2.30	4.20	1.92
Jungo	4.68	3.47	3.53	2.33	3.23	2.78
Alvaro	4.66	3.22	2.45	1.36	3.90	3.29
Khadiza	4.87	5.50	2.67	3.38	4.82	4.40

It turned out that the evaluative constructions used in the two modes were similar in frequency for all learners. Paired samples t-tests (Lena and Khadiza) and Wilcoxon Signed-ranks tests (Alvaro and Jungo) showed no significant differences between the spoken and written data evaluative constructions frequencies. (Lena:

t(16) =1.470, p=0.161; Khadiza: t(11)= -0.586, p=0.569; Alvaro: Z= -1.603, p=0.109; Jungo: Z= -1.022, p=0.307).

4.4.2 Categorizing and normalizing the data

As described in Section 4.3, the constructions were selected for analysis based on their meaning, and all constructions that expressed evaluation or existentiality were included in the analysis. After the data selection, these learner language constructions were categorized. No predetermined protocol was used but instead, the categories arose from the data on the basis of a close qualitative linguistic analysis.

The evaluative constructions, analyzed in Substudies 1, 2 and, to a lesser extent 3, were categorized into three groups: verbal, adjectival, and other. The categories were formed on the basis of the main evaluative element of the construction, i.e., the element (word) that classed the expression as evaluative. In a verbal construction, that element is a verb, as in *Tykkään Suomesta* 'I like Finland'. In an adjectival construction, that element is an adjective or an adverb, as in *Hän on tosi kiva* 'He is really nice'. These constructions are described in detail in Sections 3.2.1 and 3.2.2. In the 'other' constructions (only a few in the data, see Table 10), the evaluative elements were of various types: for example, nouns (*seikkailu* 'adventure': *se oli seikkailu minulle *menna *tuntematon *maahin ja oppia tuntematon kieli* 'it was an adventure for me to go to a new country and learn a new language', and *sydän* 'heart': **han ovat mun *sydanessa* 'they are in my heart'); and the particle *liian* 'too' (*suomen ihmiset puhuvat liian *pieni* 'Finnish people talk too little') were used. These expressions are shown in the supplementary material of the second research paper (Dynamic Usage-Based Principles in the Development of Finnish Evaluative Constructions). It is worth noting that contrary to the proportions found in the L1 speakers' control data, these other constructions cover only a very small proportion of all the constructions used by the participants to express evaluation.

The constructions that were used to express existentiality (Substudy 4) were divided into two groups: 1) the existential construction and 2) other constructions. The first group includes conventional instances of the Finnish existential construction like *Suomessa on paljon järviä* 'There are many lakes in Finland'. In these constructions, there might be some inaccuracies for example in the form of the subject, but all the necessary elements of the Finnish existential construction are in their right places (the noun phrase referring to a place, the verb *olla* 'be' in the third person singular, and the subject). The second group, other constructions, includes unconventional, creative learner language constructions, like **Se on kolme opiskelijaa samassa huoneessa* '*It is three students in the same room' and *Jyväskylä on kaupunki paljon siltan kanssa* '*Jyväskylä is a city with many bridges'.

Because of the varying lengths of both the written and spoken texts produced by the participants, the frequencies of the constructions selected for analysis were normalized. Normalization is necessary when the frequencies of constructions in different texts are compared to each other, because a longer text gives the

opportunity to produce more constructions and the probability of higher frequencies is naturally greater in longer texts. The frequencies of both evaluative and existential constructions were calculated per 100 words. This applies for the data used for RQs 1, 2, and 4, focusing on interaction and variability patterns in expressions of evaluation and existentiality, and the interaction of expressions of existentiality and instruction. For RQ3, which deals with the abstractness of two evaluative constructions, frequencies were not investigated and therefore there was no need for data normalization.

4.4.3 Visualizing interaction between subsystems: data smoothing

The first research question of this study is concerned with the interactions of different subsystems (RQ1: What kinds of interactions can be observed between the subsystems, i.e., the different linguistic means that are used to express the same meaning?). The subsystems in question are the verbal and adjectival constructions that the participants used to express evaluation. In this study, the interaction between the different subsystems is operationalized in line with earlier CDST-oriented studies: it is studied by comparing the subsystems' behavior in terms of changes in the frequency of construction use. For example, the frequency development of the evaluative verbal constructions used by a learner is compared with the frequency development of his/her use of adjectival constructions. With this approach, it is only possible to study interactions between subsystems where development can be measured quantitatively; that is to say, only numeric variables are appropriate for this kind of investigation.

In CDST studies, it is assumed that subsystems can interact with each other in three ways. In a supportive interaction, the subsystems' growth, e.g., the frequency increase of two different types of construction, takes place at the same time. In contrast, if the frequency of one type is decreasing while the frequency of the other type is increasing, the subsystems are in a competitive interaction. In a conditional interaction, a certain level of frequency of one subsystem needs to be reached before the other can develop. (Verspoor & van Dijk 2011: 86.) In this study, the method of data smoothing has been applied.

The idea of data smoothing is to make trends in the data more clearly recognizable. This is done by reducing the variability of data points plotted in a graph. (Gunst & Mason 1980: 39.) When the data are smoothed, the patterns of interaction between the variables are easier to see. This is demonstrated in Figures 12 (raw data) and 13 (smoothed data). The patterns of interaction - whether the frequencies of verbal and adjectival constructions, i.e., subsystems, are increasing or decreasing - can be clearly seen from the smoothed trajectories in Figure 13; the raw data, shown in Figure 12, do not reveal these patterns so clearly. Data smoothing is thus purely a method of visualization that helps us to see patterns of interaction.

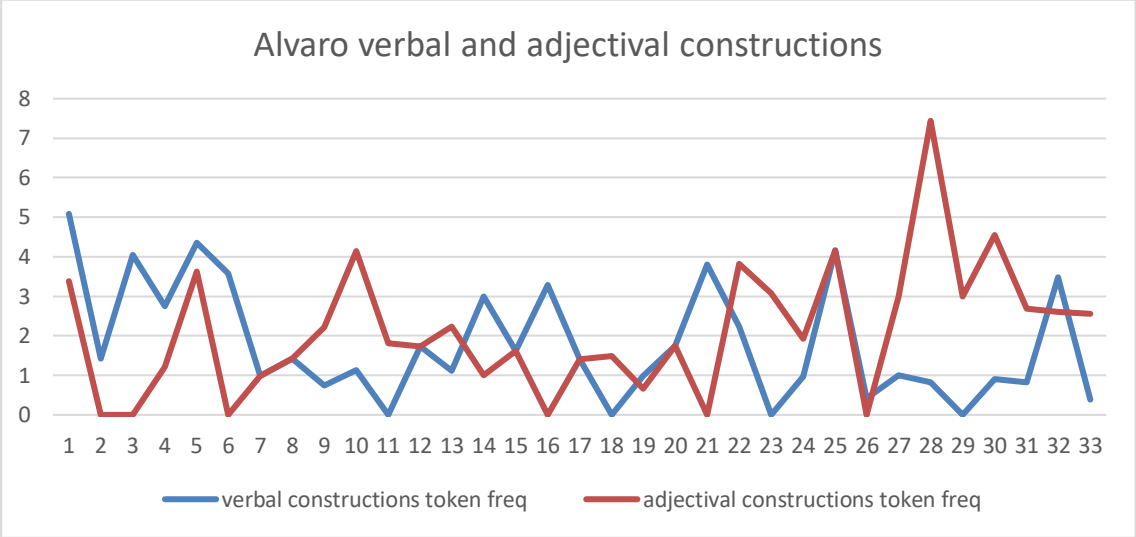


Figure 12 Alvaro's use of verbal and adjectival constructions over time: the raw data

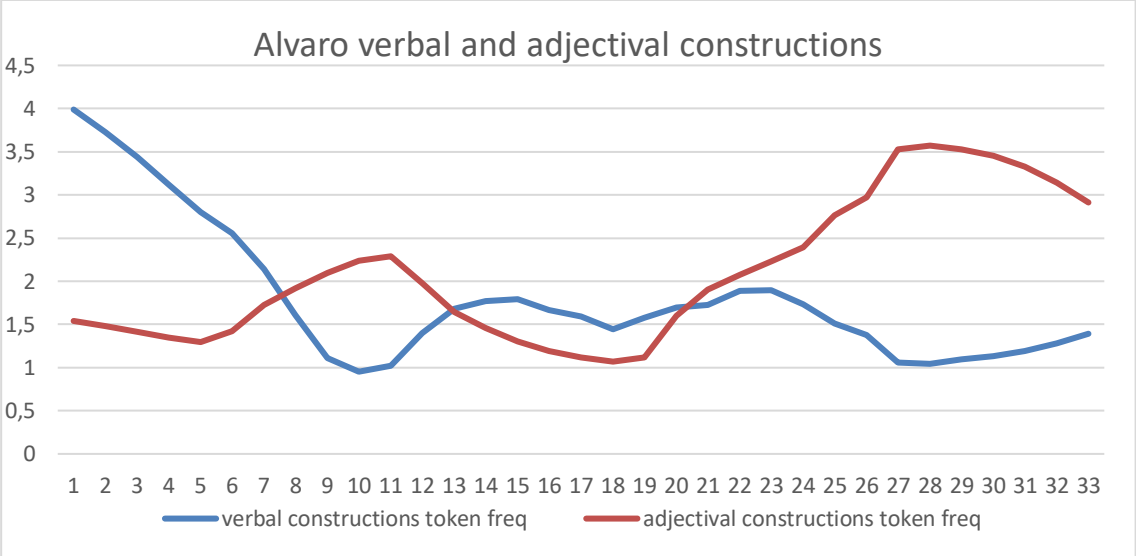


Figure 13 Alvaro's use of verbal and adjectival constructions over time: the smoothed data

The smoothing method applied in this study is called locally estimated scatterplot smoothing, LOESS (Peltier 2009). This method is a type of local regression. This means that the smoothed LOESS curve is based on linear regression lines (for linear regression, see Gunst & Mason 1980: 6-8) calculated for all data points within the moving window, with the data points in the center of the window having a greater effect on the slope of the line than the data points toward the edges of the window (Harrell 2015: 29).

The size of the moving window depends on the total number of data points (Harrell 2015: 29). Because the participants in this study had a different amount of data points (see Table 5), a different absolute window size was used for each learner. The window sizes were as follows: Lena, 12 data points (alpha=0.343); Jungo, 12 data points (alpha=0.387); Alvaro, 11 data points (alpha=0.333); Khadiza, 10 data points

(alpha=0.400). The alpha value expresses what proportion of the total number of data points falls within the used absolute window size (e.g. for Lena, 12 points of data collection out of 35 corresponds to 34.3%).

Some remarks on the use of data smoothing should be made here. In the CDST approach, details in the learners' trajectories are seen as important. De Bot, Lowie, & Verspoor (2007) pointed out that variability in learner language should not be seen as noise, but as (potentially) valuable information about development. It seems contradictory, then, that data smoothing is used as a technique to visualize the developmental patterns in this framework, because smoothing removes variability from the data. However, as described above, the LOESS technique, for example, makes use of the moving window; it does not show the general trend over the whole period of observation but it smooths the data within a certain number of data points. The moving window iteratively takes into account a section of the previous data points to calculate the current slope of the line (the current state of the system); in other words, each window is always overlapping with preceding ones. With LOESS, smoothing is done dynamically. (See Harrell 2015.) Moreover, in this study, the smoothing technique was used together with variability analyses (see Section 4.4.3), so variability was not removed from the data but it was investigated after the phases of interaction were defined with the help of the data smoothing.

When considering the data-smoothing technique, the selection of an appropriate window size is important. The smoothed curves change slightly when different window sizes are used, and this can affect the interpretation of the interaction patterns in learner language. Caution should therefore be applied when a smoothing technique is used. In this study, to avoid misinterpreting the interaction patterns, the four learners' data sets were compared in order to find the most suitable level of smoothing, and qualitative analysis was combined with the quantitative data-smoothing technique to check the plausibility of the interaction patterns.

4.4.4 Variability analyses

In this section, different perspectives on the investigation of variability and ways of doing it are discussed, because variability is an overarching theme of this study: it is investigated in all four substudies. Intra-individual variability can be defined as changes in a variable within an individual over multiple measuring points (van Geert & van Dijk 2002: 341). In a developing second language we can see, for example, that the frequency of a certain construction varies from one usage event to the next: sometimes the learner overuses a construction and then, on the following occasion, it is used much less. This kind of intra-individual variability is the subject of the second research question: What kinds of variability patterns can be observed in different subsystems and in different constructions that are used to express the same meaning? The variability in different subsystems is examined through to variability in the ways evaluation is expressed, and this facet of variability is studied in Substudies 1 and 2. The variability in different constructions used to express the same meaning is examined through expressions of existentiality, and this facet of

variability is studied in Substudy 4. The third research question of the study is also concerned with variability, but in this case, variability is studied within two evaluative constructions. In Substudy 3, variability is used to operationalize the abstractness of these two constructions.

The variability patterns within expressions of evaluation and existentiality are viewed from different angles to get a broad view on the role of variability in the developing L2. The variability in expressions of evaluation is seen from a quantitative point of view: the methods used to capture the variability patterns focus on changes of frequencies in these constructions. With expressions of existentiality, on the other hand, the variability is seen more in terms of the range of resources the learners use to express existentiality. This kind of approach, which focuses on the actual constructions that L2 learners use to express a certain meaning, is very much in line with the CDST assumptions of L2 learners trying out different modes of behavior when something new is being learned. This explorative method looks into the constructions that learners use to do something with their L2. Such an approach has not been explicitly applied in earlier studies: research on variability in a developing L2 has hitherto predominantly used quantitative methods (e.g. MinMax, RegMin-ProgMax and Altitude graphs; see e.g. van Geert & van Dijk 2002). Using these two approaches, i.e. quantitative and exploratory, helps us to advance our understanding on different kinds of variability patterns in L2. The quantitative approach is suitable for the expressions of evaluation, because they are used frequently in the four learners' data. The exploratory approach is more appropriate to explore variability in the expressions of existentiality, which are not used frequently enough for a quantative approach.

Variability in expressions of evaluation. As pointed out earlier, by using the onomasiological approach it was found that all four learners in this study almost exclusively used verbal and adjectival constructions to express evaluation. Variability patterns within these subsystems were therefore investigated in Substudies 1 and 2. More precisely, the focus was on variability in the token frequencies of verbal and adjectival constructions. Two methods were used: the moving min–max method and variance. These two methods were used together for two reasons. The first reason concerns simply clarity of presentation: in a research paper, the numerical value of the variance makes the presentation clearer than do min–max graphs, especially when space is limited. The second reason has to do with the validity of the measure of variance. As van Geert and van Dijk (2002: 361) point out, the variance may overestimate the amount of variability because of its sensitivity to the mean. For this reason, the values of variance in the use of constructions at different stages were compared with the variability patterns visible in the min–max graphs.

The moving min–max method makes use of a moving window that shows both the minimal and maximal values of a variable between a given number of data points. The window size depends on the number of data points in the whole data set, but if, for example, a window size of five data points is used, the first minimal and maximal value is calculated for data points 1–5. Then the window moves, and the second minimal and maximal value is calculated for data points 2–6, and so on. Finally,

these minimal and maximal values can be plotted on a line graph (see the dark grey lines in Figure 14) and we can see the bandwidth of observed scores, i.e., the general pattern of variability. Often the raw data are also plotted on the graph, as in Figure 14 (the light grey line in the middle). The wider the bandwidth, the more variability the variable shows. For example, in Figure 14 we can see that the variability in the token frequency of verbal constructions in Lena's data decreases drastically in the middle of the period of observation. The min–max graphs for each learner's token frequency of verbal and adjectival constructions are presented in an appendix of the second research article (see original papers).

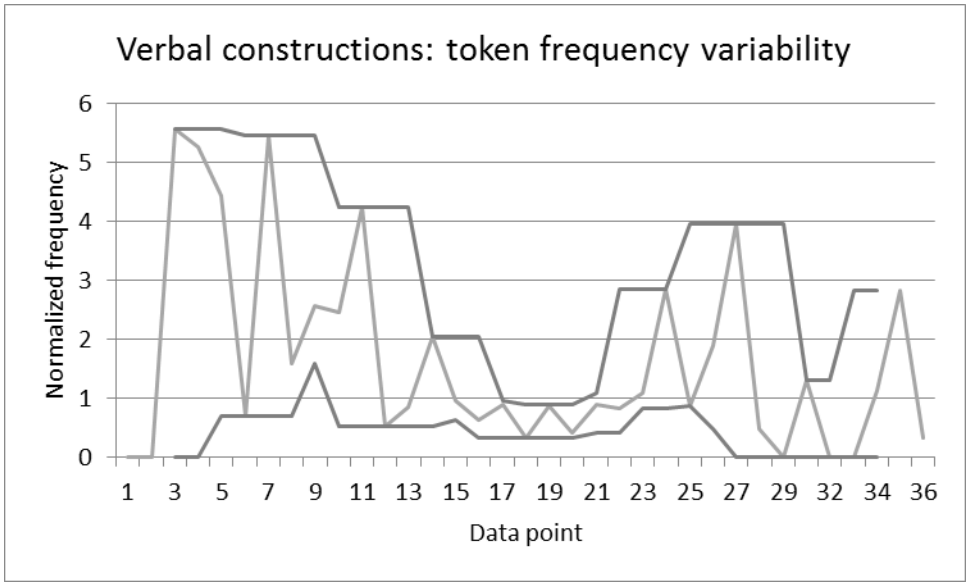


Figure 14 Moving min–max graph showing the variability in Lena's token frequencies of verbal constructions

Variance can be used to give a numerical value to variability. Variance measures how much a set of numbers deviates on average from the mean. Variance (σ^2) is the average of the squared deviations from the mean (μ), i.e., the squared standard deviation (SD) (van Geert & van Dijk 2002: 361). The formula for calculating variance is as follows (Hogg & Craig, 1965: 109):

$$\sigma^2 = \frac{\sum(x - \mu)^2}{n}$$

Like with the moving min–max method, the variance of the token frequency of verbal and adjectival constructions was calculated for phases; the phases were defined on the basis of the raw data.

As pointed out in Section 2.3.2, CDST-oriented studies have investigated variability in L2 because it is seen as an important aspect of development. Changes in

variability have been seen as a sign of development also in less CDST-oriented studies. Variability in language automatization, in other words, how fluent an L2 learner is in production or reception in comparison to an L1 user, has been measured for example by Pili-Moss et al. (Pili-Moss, Brill-Schuetz, Faretta-Stutenberg, & Morgan-Short, 2019). In their study, Pili-Moss et al. (2019) measured reaction times in an artificial language-learning experiment testing the relationship between declarative and procedural learning ability and automatization in comprehension. The researchers point out that the development of automatization cannot be evaluated based only on the decrease in reaction times but also the variability of the reaction times should be measured. In their study, the variability in reaction times was measured by the coefficient of variation (CV), which is a ratio of the standard deviation to the mean. Pili-Moss et al. (2019) claim that automatized language processing is not only faster but also less variable than less automated language processing. This reasoning is in line with CDST assumptions of increased variability being a characteristic of a rapidly developing system.

Variability in expressions of existentiality. When the variability in expressions of existentiality was studied, the approach was explorative. The aim was to explore what kind of variability there is in individual learners' resources for expressing this meaning; in other words, what constructions learners use to express the meaning of existentiality when their linguistic resources are still limited. The learners were compared in terms of the different types of constructions that they used. Variability was investigated with regard to the conventional Finnish existential construction. A large repertoire of different kinds of existential constructions (both conventional and unconventional) was considered a high degree of variability. For example, the learner who used three different kinds of constructions to express existentiality (see Examples 40, 41, and 42) was considered to be more variable than the learner who used only one construction to express this meaning.

(40) *Jyväskylä on kaupunki paljon *silta-n kanssa*
Jyväskylä be(3SG) city many *bridge-GEN with
'Jyväskylä is a city with many bridges'

(41) *Talve-lla se ei ole aurinko Suome-ssa päivä-llä.*
Winter-ADE it NEG be(3SG) sun Finland-INE day-ADE
In the winter, it is not sun in Finland during the day (In the winter, there is no sun in Finland during the day)

(42) **ole ole-ma-ssa monta *sukke-ja*
*be(3SG) be-3.INF-INE many *sock-PL.PAR
'exists many socks'

After the data selection, as described in Section 4.3, simple bar graphs were created of each learner's use of expressions of existentiality. These graphs show that different kinds of constructions were used over time by each learner to express

existentiality, so the graphs show how their repertoire for expressing this notion developed over time.

Operationalization of abstractness. When the development of abstractness of L2 constructions was studied through the targeted *haluta* 'want' and *tykätä* 'like' constructions, variability was used in its operationalization. Because the aim was to investigate how L2 constructions develop over time, the data set of each learner was divided into two phases: initial use of the constructions, and later use of the constructions. These phases are based on the number of utterances with the targeted constructions *haluta* 'want' and *tykätä* 'like'. The abstractness of the constructions used in these two phases was studied by quantifying the variability in the slots of these constructions. Two types of slots were identified: the slot for the main verb (*haluta* and *tykätä*) and the slot for the complement. If the slots in the construction are highly variable, the level of abstractness of that construction is high. If the slots are not variable, that is to say, if the construction is lexically specific, the level of abstractness of the construction is low.

To investigate variability in the slots in the *haluta* 'want' and *tykätä* 'like' constructions, the number of different forms of *haluta* 'want' and *tykätä* 'like' were first calculated. For example, the forms *haluan* 'I want' and *haluat* 'you want' were calculated as different forms of the verb *haluta* 'want'. After that, the number of different types of complement was calculated. These included a noun-phrase, non-finite clause and subordinate clause complement. The number of different noun phrases, non-finite clauses, and subordinate clause was also calculated. Non-target-like forms were included in the count.

Based on these numbers, the four learners' *haluta* and *tykätä* constructions were put on a continuum from lexically specific (a low level of abstractness) to productive, abstract constructions. It is important to note that it is impossible to draw a sharp line between the two: at some point in their development, a learner's constructions might be relatively more productive than they were earlier, or one learner's constructions might be relatively more productive than another's. In other words, productivity is a relative notion, and no claim about absolute productivity or abstractness is made here. Nor is the abstractness of the learners' constructions compared to the abstractness of L1 speakers' constructions, but a change in abstractness is seen as a change relative to the learner's earlier use of the constructions. However, as more proficient language use is characterized by increased variability and flexibility, an increase in productivity can be seen as more proficient language use.

Table 10 shows the continuum between lexically fully fixed constructions and highly variable, productive, abstract and schematic constructions. An example of a fully lexically specific, formulaic construction is the utterance *Haluan matkustaa Saksaan* 'I want to travel to Germany'. This construction is not productive because it is repeated in (almost exactly) the same form for the same interactive purpose more than once. A little more productive is a construction with one open slot, for example the slot for a NP (*Haluan matkustaa* + NP 'I want to travel + NP'). In a semi-schematic, semi-abstract pattern, the variable part in the construction is even larger: for example, the whole non-finite clause shows variability, i.e., the learner uses several different non-finite clauses within this slot (*Haluan* + NFC 'I want + NFC'). In a fully abstract,

schematic construction both the slot of the *haluta* verb and the slot of the non-finite clause show variability (*haluta* + NFC 'want + NFC').

Table 10 Continuum between lexically specific and productive constructions, where the NP and NFC are open variable slots

	← →			
Example	*Haluan matkustaa Saksaan* 'I want to travel to Germany'	*Haluan matkustaa* + NP 'I want to travel + NP'	*Haluan* + NFC 'I want + NFC'	HALUTA + NFC WANT + NFC
Type of construction	Lexically specific, formulaic expression	Mostly formulaic expression	Semi-schematic, semi-abstract pattern	Fully schematic, abstract pattern
Fixedness of the construction	Fully fixed	Partially variable: construction has one open slot	Semi-variable: construction has more open slots	Highly variable
Degree of productivity	Not productive			Highly productive

A similar kind of approach has been used in earlier studies investigating the productivity and abstractness of L2 constructions. Eskildsen (2012), for example, uses the Type Token Ratio (TTR) to investigate the productivity of L2 constructions. When the TTR is 1, all of the constructions that the learner has produced are different, which means that the constructions are more abstract and the learner language more productive. When the TTR is closer to 0, the constructions used by the learner are more similar to each other, and they are therefore less productive and abstract. The TTR is not used as a method in this study, but the development of abstractness is investigated in a similar way because abstractness is based on the variability within the constructions: whether the constructions are different or similar to each other.

4.4.5 Studying the interaction between learning trajectories and instruction

The fourth research question of this study is about the interaction between, on the one hand, the four learners' trajectories in expressing certain notions and, on the other hand, the instruction they received: What kinds of interactions can be observed between the development of constructions and instruction? The main focus is on the interaction between instruction and expressions of existentiality, in Substudy 4, but the impact of instruction on the use of evaluative constructions is also briefly discussed in Substudies 1 and 2. Studying the impact of instruction was made

possible by the researcher's participation in the lessons, either as teacher or observer (see Section 4.2.2).

It is possible here to investigate the impact of instruction on the developmental trajectories of the existential construction_because there were two clear periods of pedagogical interventions on this construction. Changes in the learners' developmental paths, for example, an increase in their use of the conventional Finnish construction or in their accuracy in the construction, were compared with the timing of the pedagogical interventions. The results were brought out in visualizations. Simple bar graphs were created showing the use over time of different kinds of constructions for each learner, and the data set was divided into three phases: 1) the time before the first pedagogical intervention, 2) the time in between the two pedagogical interventions, and 3) the time after the second intervention. Similar graphs showing the number of existential constructions with target-like and non-target-like subject were created. These graphs helpfully showed up clear changes in the participants' use of the constructions as well as changes in the accuracy of the constructions and their relation to the pedagogical interventions. After identifying these changes and their relation to the instruction time-wise, the constructions were analyzed in greater detail in relation to the content of the instruction, for example, in terms of what aspects of the existential construction were emphasized in the teaching and what was present in the learning material. Since prior research on the impact of L2 instruction has tended to use a pre-test – post-test setting and few studies have investigated the impact of pedagogical interventions in a longitudinal setting, this study used an explorative approach.

5 DYNAMIC USAGE-BASED PRINCIPLES IN L2 FINNISH DEVELOPMENT

This section presents the findings of this study. First, main results in relation to the four research questions are presented in Section 5.1. After that, a summary of the results of each substudy are presented.

5.1 Main results of the study

The general aim of this study was to trace the development of the constructions that four beginner learners of Finnish use to express evaluation and existentiality. Different aspects of development are studied with four research questions, which were presented in Section 1.2 of this introduction. The research questions are repeated here for the sake of clarity.

1. What kinds of interactions can be observed between the subsystems, i.e., the different linguistic means, that are used to express the same meaning?
2. What kinds of variability patterns can be observed in different subsystems and in the different constructions that are used to express the same meaning?
3. How do L2 constructions develop over time in terms of lexical specificity and abstractness?
4. What kinds of interactions can be observed between the development of constructions and instruction?

The following paragraphs present summaries of the main results of the study in relation to these research questions. Before the main results, an overview will be given of the frequency of the phenomena investigated in the data. Table 11 shows the normalized frequencies of different constructions expressing evaluation over the whole period of observation (RQs 1 and 2).

Table 11 Normalized frequencies of different constructions expressing evaluation over the whole period of observation, all learners

	Total	Verbal	Adjectival	Other
Lena	118.95	58.22	57.75	2.98
Alvaro	129.90	59.39	69.53	0.98
Khadiza	136.72	69.64	59.79	7.29
Jungo	125.93	65.00	59.75	1.18

As shown in Table 11, all of the learners used almost exclusively verbal and adjectival constructions to express evaluation: the use of other constructions is very limited. This finding is not surprising in the light of previous research. As Alba-Juez and Thompson (2014: 10) point out, the lexical level is "the most evident level" of evaluative language when words with an "evaluative load" are used. It has also been shown that beginner L2 Finnish learners also use the lexical level when expressing the certainty of their opinions (Aalto 1997). Aalto (1997: 69) shows that a beginner L2 Finnish learner used words like *ehkä* 'maybe' and *vähän* 'a bit' to express the certainty of his opinions while his speaking partner who is an L1 Finnish speaker uses also the syntactic level.

In Table 12, the number of utterances with the *haluta* 'want' and *tykätä* 'like' constructions are prensented (RQ 3). Only the non-normalized frequencies are presented, because in substudy 3, the analysis is based on the non-normalized data.

Table 12 Number of utterances with *haluta* 'want' and *tykätä* 'like', all learners

	haluta 'want'	*tykätä* 'like'
Lena	49	34
Alvaro	36	26
Khadiza	43	33
Jungo	34	35

Table 13 shows the number of constructions used to express existentiality (RQ 4).

Table 13 Number of constructions used to express existentiality, all learners

	Number of constructions	Number of constructions per 100 words
Lena	39	15.67
Alvaro	30	9.82
Khadiza	22	11.20
Jungo	54	34.40

Table 13 shows that expressions of existentiality were not very frequent in the data set when compared to the expressions of evaluation. Regarding differences between the learners, there is more variation in the frequencies of constructions used to express existentiality (Table 13) than in the frequencies of evaluative constructions (Table 11). However, from the qualitative point of view, the constructions used to express existentiality are highly variable (see Examples 40–42).

1. **When the learner is expressing a certain meaning, different linguistic constructions may show a competitive interaction with each other or one type may be used at the expense of the other (RQ1)**

In Complex Dynamic Systems Theory (CDST), the developing L2 is seen as a complex, dynamic system. This system consists of different subsystems, for example of phonology, morphology, and syntax, which work together as a whole (Verspoor & van Dijk, 2011). In this study, the linguistic means used by the learners to express evaluation are seen as a system consisting of subsystems, namely verbal and adjectival constructions. According to CDST, three kinds of interaction between subsystems can be observed: 1) competitive 2) supportive and 3) conditional. In a competitive relationship, the subsystems compete for the same resources, which leads to the situation that one construction is used or develops at the expense of another. In a supportive relationship, two constructions develop in unison because they support each other's growth. In a conditional relationship, one construction needs to develop to a certain extent (e.g. a certain frequency in the use of a construction needs to be achieved) before the other can develop. (Verspoor & van Dijk 2011: 86.)

In this study, it was found that all of the learners used almost exclusively verbal and adjectival constructions to express evaluation, and the use of these constructions occurred in phases. The smoothed data (for data smoothing see Gunst & Mason 1980: 39; Peltier 2009) were used to detect these phases and they show that at times verbal constructions were used more frequently than adjectival constructions and vice versa. The smoothed data also reveal how the frequencies of the constructions are changing over time within the phases, i.e. whether the frequencies are increasing or decreasing over time.

All learners used first verbal constructions and in this verbal phase, the use of adjectival constructions was limited. Once adjectival constructions were explored and used, the use of verbal constructions decreased and became less variable. In other words, the increase in the use of adjectival constructions happened at the expense of verbal constructions. These patterns can be seen clearly in Lena's data in Figure 15[17]. Similar patterns were detected in all learners' data, but for some learners they are less pronounced. Also the timing of these phases differs among the learners.

[17] The numbers 1 – 3 at the top of the graph refer to phases. In phase 1, verbal constructions were preferred, in phase 2, adjectival constructions were preferred, and in phase 3, there was no big difference in the use of constructions (for a more detailed discussion, see the original paper: Dynamic Usage-Based Principles in the Development of L2 Finnish Evaluative Constructions).

A more detailed discussion is provided in the second substudy: Dynamic Usage-Based Principles in the Development of L2 Finnish Evaluative Constructions.

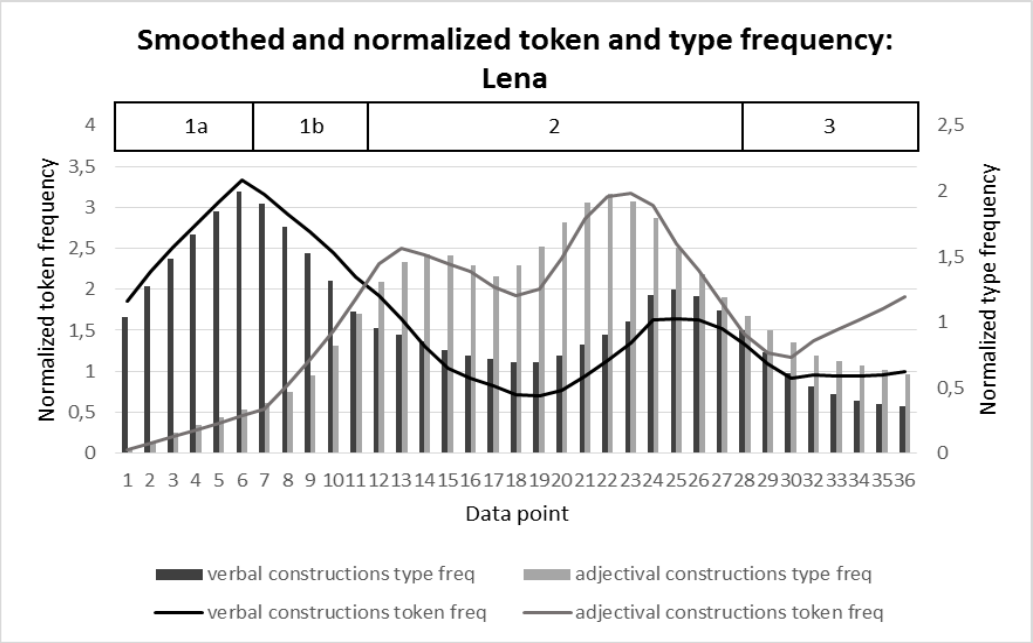


Figure 15 Smoothed and normalized token and type frequencies of verbal and adjectival constructions: Lena

The fact that one construction type is used at the expense of the other, as well as the competitive relationship between the two construction types (i.e. the frequencies of one type is decreasing while the frequencies of the other is increasing) show that when learning to express meanings in social interaction, different aspects of the learner's linguistic system do not develop in isolation but the different subsystems interact with each other. In a competitive relationship, limited resources, such as the learner's cognitive carrying capacity, restrict the functioning of the system: when one aspect is used, the other aspect suffers temporarily. This study shows that one way of expressing a certain meaning may be pronounced at certain points in a learner's development because of the learner's limited resources.

Interaction between the constructions was investigated with the quantitative method of data smoothing (Gunst & Mason 1980: 39; Peltier 2009). A qualitative inspection was used together with this visualization method to study the interaction in more detail. The qualitative analysis supported the observation of a competitive interaction between verbal and adjectival constructions. Figure 16 shows that Lena used only one adjectival-like construction, *lempi*[18] 'favorite', in her initial verbal phase. When she started to use more adjectival constructions in her adjectival phase, she relied strongly on only two verbal constructions, *tykätä* 'like' and *haluta* 'want', which were familiar to her from earlier use (see Figure 17). However, these constructions became more variable during these weeks. Similar kinds of patterns

[18] Lempi 'favorite' can be categorized as a noun, but since its function and use are often similar to those of adjectives, in this study it is placed in the same group as adjectives

were detected in the other learners' data, too (see the original article of the second substudy).

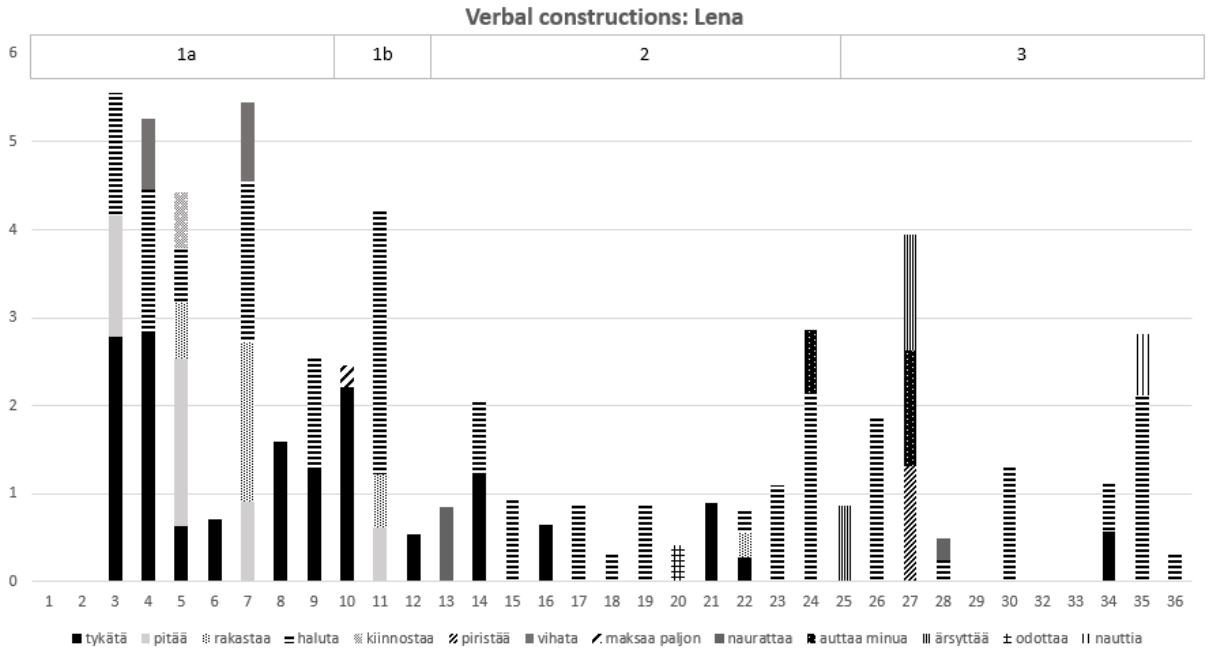


Figure 16 Use of verbal constructions over time: Lena

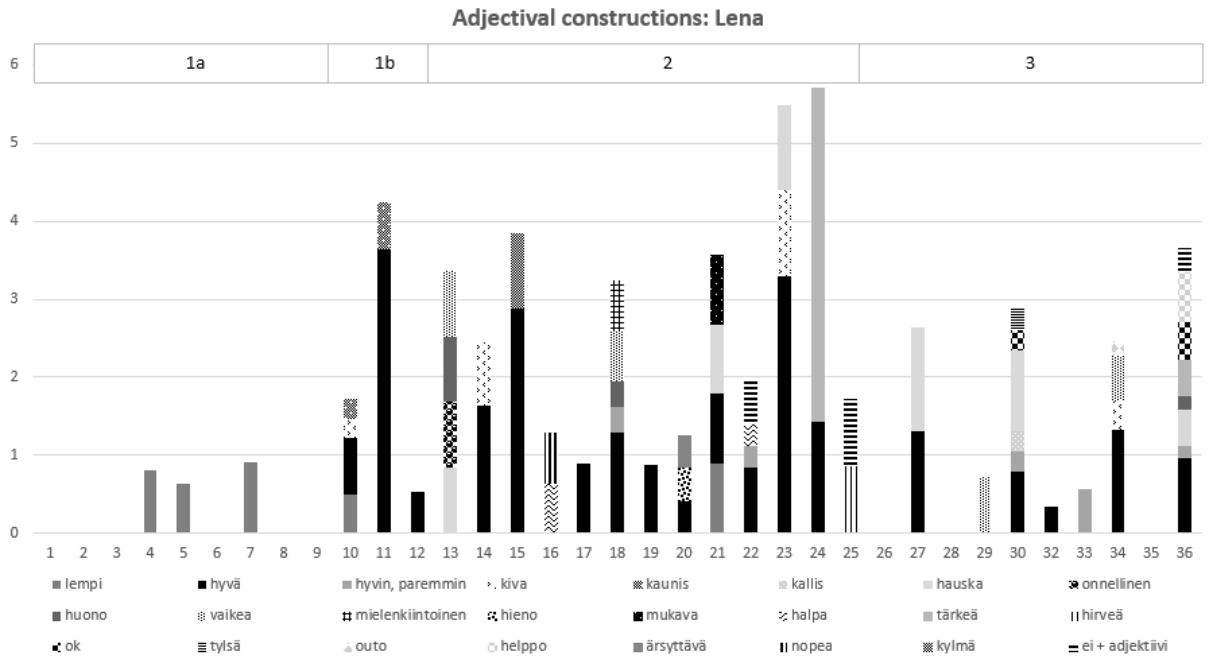


Figure 17 Use of adjectival constructions over time: Lena

This finding adds to a growing body of literature that shows that L2 is a complex, dynamic system in which different subsystems continuously affect each other, and a change in any one aspect has the potential to affect the whole system (see e.g. Spoelman & Verspoor 2010; Verspoor & van Dijk 2011; Tilma 2014; Chan, Verspoor, & Vahtrick 2015). The finding suggests that using both quantitative and qualitative analyses can give us a more precise picture of the interactions between different subsystems in L2 development.

2. **Variability is high when the learner is discovering and trying out different ways to express a certain meaning (RQ2)**

In CDST, variability, i.e., changes within one variable within one individual over multiple measuring points, is related to progress: high degrees of variability have been observed in the early stages of learning and variability typically decreases over time, as the learner develops. This kind of variability pattern is related to the learner's attempts to perform the task. When the learner is trying out something new, he or she may discover many different strategies and the new and old strategies may alternate, which leads to an increase in variability. (Ellis 1994; Thelen & Smith 1994; Spoelman & Verspoor 2010; van Dijk et al. 2011; Tilma 2014; Chan, Verspoor & Vahtrick 2015; Lowie & Verspoor 2018).

In this study, the variability in both evaluative and existential constructions was studied. For evaluative constructions, the variability was investigated from the point of view of different subsystems. In other words, as it was discovered that both verbal and adjectival constructions were used to express evaluation and that their use occurred in phases, the variability patterns of these constructions were investigated. Variability was operationalized in terms of variance, which shows how much a set of numbers on average deviates from the mean. The findings show that the subsystem that was being explored during that phase – either verbal or adjectival constructions - showed more variability than the other type. Moreover, when the learner started to explore one construction type more extensively, it exhibited more variability than before.

This can be seen clearly for example in Lena's data that are shown in Table 14 (for other learners, see original research article of the second substudy: Dynamic Usage-Based Principles in the Development of L2 Finnish Evaluative Constructions). The higher token frequency variance of verbal constructions in phase 1a shows that when verbal constructions are used more frequently and in a more variable way compared to adjectival constructions (shown by higher token and type frequency of verbal constructions), there is more variability in the verbal constructions. In phase 2, when adjectival constructions are used more frequently, their token frequency variance is higher than that of verbal constructions. This means that there is more variability in adjectival constructions in phase 2 compared to verbal constructions. It is also noteworthy that in phase 2, the token frequency variance of verbal constructions is lower than in phase 1 indicating that when a certain subsystem is not focused on, its variability decreases. In phase 3, when the use of verbal and adjectival

constructions become more balanced, the variance in token frequency does not differ considerably between the two construction types.

Table 14 Lena's different phases of construction use: the mean frequencies and the variance of verbal and adjectival evaluative constructions

		Token frequency[a]		Type frequency		Token frequency variance	
Phase	Weeks	Verb.	Adj.	Verb.	Adj.	Verb.	Adj.
1a	1–9	2.84	0.26	1.75	0.22	4.99	0.14
1b	10–12	2.41	2.16	0.95	0.91	2.30	2.39
2	13–25	1.04	2.74	0.84	1.78	0.43	2.46
3	26–36	1.19	1.32	0.73	0.79	1.63	1.80

[a]The token and type frequencies are calculated per 100 words.

The operationalization of variability was straightforward for constructions used to express existentiality: the different linguistic means used to express existentiality were traced for each learner. The results show that some learners were more variable than others in terms of the different constructions used to express this meaning: two participants, Lena and Jungo, tried out many different constructions, while the other two, Alvaro and Khadiza, used almost exclusively the conventional Finnish existential construction. It is worth noting that Alvaro and Khadiza started to express this meaning more frequently after the pedagogical intervention. In other words, the learners who were not discovering an L2 independently seemed to need a stronger external force to set the system in motion. More adventurous learners, on the other hand, may find the conventional way to express a certain meaning by trying out for themselves how the L2 works. It was also found that Lena, who was the most adventurous learner in terms of her existential constructions, because of the high degree of variability in her expressions, was also the most successful learner, as was shown when the learners' general proficiency was evaluated at the end of their studies. For a more detailed discussion, see the original research article of the fourth substudy: Variability and the effect of instruction in L2 Finnish.

Comparison of these findings with those of other CDST-oriented studies confirms the association between increased variability and progress. For development to take place, the learner needs to try things out, which leads to increased variability, especially in the early stages of learning (Ellis 1994; Thelen & Smith 1994; Spoelman & Verspoor 2010; Tilma 2014). It can also be suggested that high degrees of variability predict success later on (see also Chan, Verspoor & Vahtrick 2015; Lowie & Verspoor 2019; Huang, Steinkrauss & Vespoor in prep.). This study was able to show that similar variability patterns to those found in earlier studies are also found when the investigation sets out from meaning.

3. **L2 learners can develop an abstract construction quickly, but also lexically specific constructions play a role in development (RQ3)**

In usage-based approaches to language learning, it is assumed that learners develop their constructions bottom-up, that is, that general patterns of the target language are derived from lexically specific, formulaic items that are tied to specific usage events (e.g. Tomasello 2003; Dąbrowska & Lieven 2005; Eskildsen 2009; Langacker 2009). This means that learners start off with constructions that show very little variation in both form and function. Later on, the constructions become more variable as the learner discovers the different functions of different parts of the construction and is able to vary them. (E.g. Dąbrowska 2001; Tomasello 2003; Dąbrowska & Lieven 2005; Mellow 2006; Eskildsen 2009, 2012, 2018; Roehr-Brackin 2014.) This kind of learning path was first established for L1 development and it was Ellis (2002: 170) who suggested it as 'a default guideline' for studying L2 development as well.

This default guideline has been shown in some studies in which L2 constructions have developed from lexically specific items (e.g. Mellow 2006; Eskildsen 2009, 2012; Roehr-Brackin 2014). However, there is evidence that L2 learners may also develop abstract representation relatively quickly without first using formulaic, lexically specific constructions (Eskildsen 2012, 2015; Roehr-Brackin 2014). The findings of this study support both these views. When the two constructions that the participants used to express evaluation were investigated, it was found that the learners' initial constructions formed a continuum from lexically specific to abstract and productive (see Table 16). Some constructions were initially relatively fixed (Lena's *haluaisin matkustaa* + NP 'I would like to travel + NP' and Jungo's *haluaisin* + NFC 'I would like + NFC'). Some constructions sprang from slightly more variable schemas, in which both the main verb and the complement showed variation (all of the learners' *tykkään* 'I like' and *tykkäätkö* 'do you like' had an open slot for a noun phrase, a non-finite clause, or both). Some of their constructions were highly variable, supporting the interpretation of an abstract representation (Alvaro's and Khadiza's *haluta* + non-finite clause and *haluta* + non-finite clause). For a more detailed discussion on these findings, see the original research article of the third substudy: Lexically specific vs. productive constructions in L2 Finnish learners. For the existential construction, it was also found that some of the learners developed the construction from lexically specific items but others relied on more variable expressions (see the fourth substudy: Variability and the effect of instruction in L2 Finnish). It can be concluded that L2 learners might develop relatively abstract representations quickly without using only lexically specific items first.

We can speculate on the reasons for this kind of quick development of an abstract schema. One reason could be that L2 learners make use of their L1 when forming L2 expressions (e.g. Cadierno 2004; Cadierno & Ruiz 2006; Smiskova-Gustafsson 2013). Also the fact the Finnish is a morphologically rich language may play a role in the quick development of abstractness because learners are exposed to a greater number of different exemplars (see Steinkrauss 2009). Instruction may also have an effect: the participants in this study may have developed explicit knowledge

about the constructions from the teaching they received (for the role of explicit knowledge in usage-based learning, see Roehr-Brackin 2014).

Regarding the role of lexically specific expressions, it was also found that some L2 constructions might be relatively formulaic even when some schematization has already taken place. Khadiza seems to be a learner who recycled lexical material also at the end of the period of data collection. This finding shows that lexically fixed, formulaic expressions might also characterize later stages of L2 development, and the use of prefabricated chunks may be important for fluent production at any stage of L2 development (compare Barlow 2018).

4. **Instruction can help learners to find the conventional way to express a certain meaning, but instruction is not always helpful in achieving a high level of accuracy (RQ4)**

In Complex Dynamic Systems Theory, it is seen that the developing L2 interacts with external resources, like the time invested in learning, motivation, or instruction (see e.g. Larsen-Freeman & Cameron 2008; Verspoor, de Bot, & Lowie 2011). In this study, the external resource that was investigated was instruction. It was found that instruction can help learners find conventional ways to express a certain meaning, but the pedagogical interventions were not effective for the development of accuracy.

When the constructions that were used to express existentiality were studied, it was found that besides the conventional existential construction (e.g. *Suomessa on paljon järviä* 'There are many lakes in Finland'), two learners, Lena and Jungo, used several other creative constructions to express this meaning. The learners used these constructions especially before the pedagogical interventions, but they kept using some of them also after the interventions. There was, nevertheless, a clear trend toward increased use of the conventional existential construction and less use of the other, unconventional, constructions. This can be seen clearly in, for example, Lena's data (see Figure 18, where blue and red arrows indicate the timing of the two pedagogical interventions). From this it can be concluded that instruction may be an effective external resource in causing changes in L2. For a more detailed discussion, see the original research article of the fourth substudy: Variability and the effect of instruction in L2 Finnish.

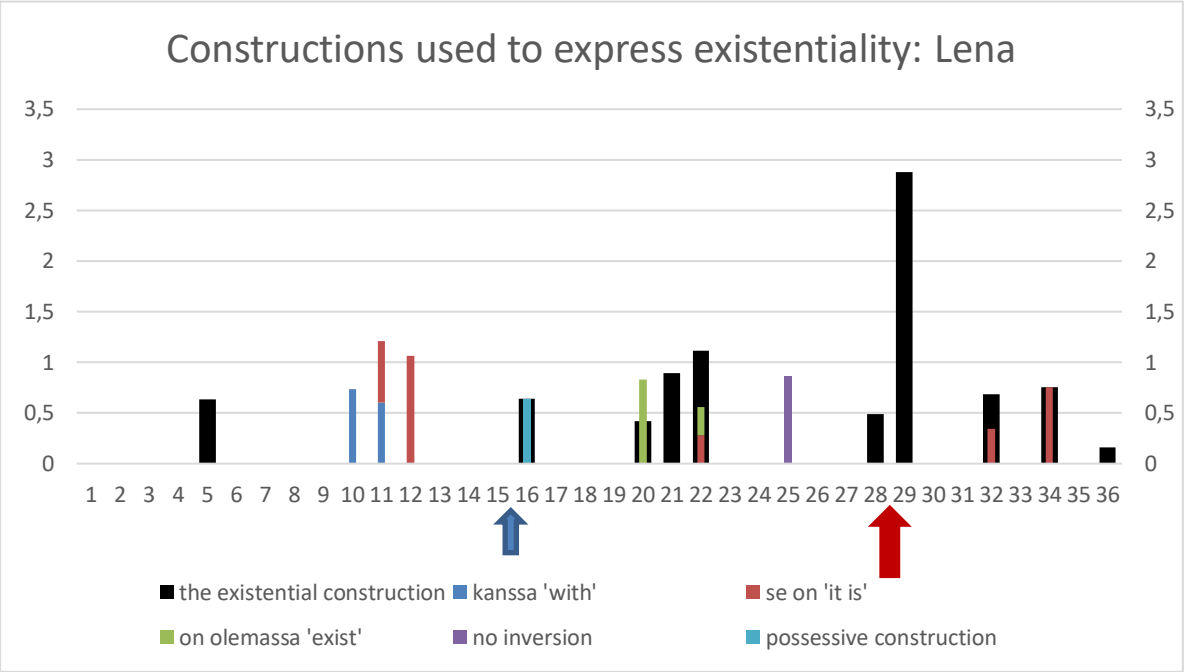


Figure 18 Frequencies of constructions used to express existentiality: Lena

These findings raise the question of the timing of a pedagogical intervention. Different views have been put forward as to what is a good time for a pedagogical interventions. It has been argued that an intervention is especially effective 1) when the learner has a communicative need for the construction (Aalto, Mustonen & Tukia 2009) or 2) when the learner's linguistic system exhibits a lot of variability (Larsen-Freeman & Cameron 2008). Larsen-Freeman and Cameron (2008) point out that when the learner language exhibits a lot of variability, the learner's developing language system undergoes changes with less energy than during more stable periods. As two participants in this study, Lena and Jungo, seemed to have a communicative need to express the meaning of existentiality from early on in their studies and we can observe relatively high degrees of variability in their data initially (see Figure 18 for Lena), it could be argued that an earlier timing of the pedagogical intervention might have been beneficial for these learners. For the less variable learners, Alvaro and Khadiza, the main pedagogical intervention seemed to trigger the use of the existential construction. This can be seen clearly in Figure 19, which shows Alvaro's increased use of the conventional existential construction after the main pedagogical intervention (indicated with the red arrow). It could be argued that the less variable learners, who were not trying out different ways to express this targeted meaning, needed the pedagogical intervention to start using this construction.

Figure 19 Frequencies of constructions used to express evaluation: Alvaro

Regarding accuracy in the existential construction, this study shows that inaccurate forms of the subject were produced also after the pedagogical intervention, which had focused very much on the form of the subject. This suggests that an explicit focus on form is not necessarily useful for the development of accuracy. This finding on the development of accuracy in the subject of an existential construction is in line with Kajander (2013), who shows that accuracy in this context remains relatively low until the B2 level. For a more detailed discussion, see the fourth substudy.

In the following four sections, the main results and discussions of the substudies are presented. The research questions of the substudies are presented in Table 15. The two arrows in the table visualize the research process: the findings of Substudy 1 provided the hypotheses for Substudies 2 and 3.

Table 15 Research questions of the substudies

Study	RQs
1	1. What constructions does the learner use to express evaluation, how do they develop over time, and what type of interactions can be observed between the constructions? 2. How does the learner diversify her constructions as she becomes more proficient? 3. Does the development of constructions go mainly from lexically specific items to more schematic, abstract constructions?
2	1. What types of constructions do the learners use to express evaluation and what types of interaction can be observed between these constructions? 2. What kinds of patterns of variability can be observed in the use of the different types of evaluative constructions?
3	1. Does the development of the *haluta* 'want' and *tykätä* 'like' constructions of four Finnish L2 learners start with lexically specific expressions? 2. Do these initial constructions develop into more abstract patterns over time?
4	1. What kind of learning trajectories do the four learners show when expressing the meaning that is conventionally expressed with the existential construction in Finnish? 2. What kind of impact does the pedagogical intervention have on the four learners' use of e-constructions? 3. What kind of impact does the pedagogical intervention have on the four learners' accuracy in the use of e-constructions?

All articles have multiple authors and the corresponding author of all papers is Sirkku Lesonen. The corresponding author has carried through the most significant part of the research. The original research plan and the research problems have been formulated by the corresponding author, and they have been defined together with the co-authors. The data collection, transcription, coding, selection, and analysis have been carried out by the corresponding author. Issues concerning the data selection and analysis have been discussed and solved together with the co-authors. The co-authors have contributed to scientific discussions about the content of the research articles. The articles have been written by the corresponding author and they have been commented by the co-authors. Issues concerning the content and the structure of the papers have been discussed together with the co-authors, and the corresponding author has made the final decisions concerning these aspects. All co-authors have accepted the final versions of the papers before publication or submission.

5.2 Substudy 1: Expressing evaluation in Finnish: Competitive interaction and variability in one learner

Lesonen, S., Suni, M., Steinkrauss, R. & Verspoor, M. 2017. From conceptualization to constructions in Finnish as an L2: a case study. Pragmatics & Cognition. 24:2. 212–262.

Substudy 1 is a case study which investigated one learner's, Lena's, expressions of evaluation and their development over time. The study aimed to answer the following research questions:

1. What constructions does the learner use to express evaluation, how do they develop over time and what type of interactions can be observed between the constructions?

2. How does the learner diversify her constructions as she becomes more proficient?

3. Does the development of constructions go mainly from lexically specific items to more schematic, abstract constructions?

The first main finding of this study is that the learner, Lena, used almost exclusively verbal constructions (e.g. *Minä tykkäsin *kaikki ruuasta* 'I liked *all the food') and adjectival constructions (**kasvastudeiden on tosi hyvä* 'and the education (science) is really good') to express evaluation. Moreover, we can observe phases when these constructions were in competitive interaction with each other or one was used at the expense of the other (see Figure 15). Initially, Lena used mainly verbal constructions and the use of adjectival constructions was very restricted (Phase 1). When the pattern flipped and adjectival constructions were used more frequently and more variably compared to their initial use, the use of verbal constructions decreased (Phase 2). In the last weeks of the period of observation, the pattern was more mixed: there was no clear preference for one construction or the other (Phase 3).

The second main finding of this study is that variability was higher for the construction being explored by the learner. In other words, when Lena used verbal constructions in the first weeks, their token frequency showed more variability than the token frequency of adjectival constructions. In the adjectival phase, the token frequency of adjectival constructions exhibited more variability than the token frequency of verbal constructions (see the moving min–max graphs in Figures 20 and 21). A similar pattern of variability could also be observed when the range of constructions was analyzed qualitatively. Initially, Lena used only one adjectival-like construction, *lempi* 'favorite'; in other words, the variability in her adjectival constructions was low. When she began to explore adjectival constructions, the variability in verbal constructions decreased and she relied on the *tykätä* 'like' and *haluta* 'want' constructions that were familiar to her from the previous weeks.

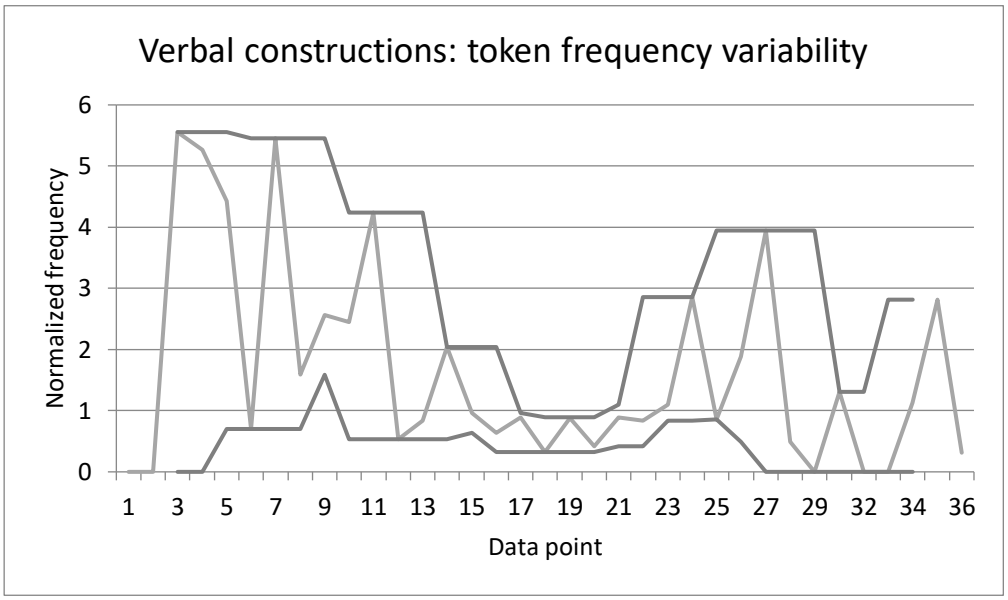


Figure 20 Variability in token frequency of verbal constructions: Lena

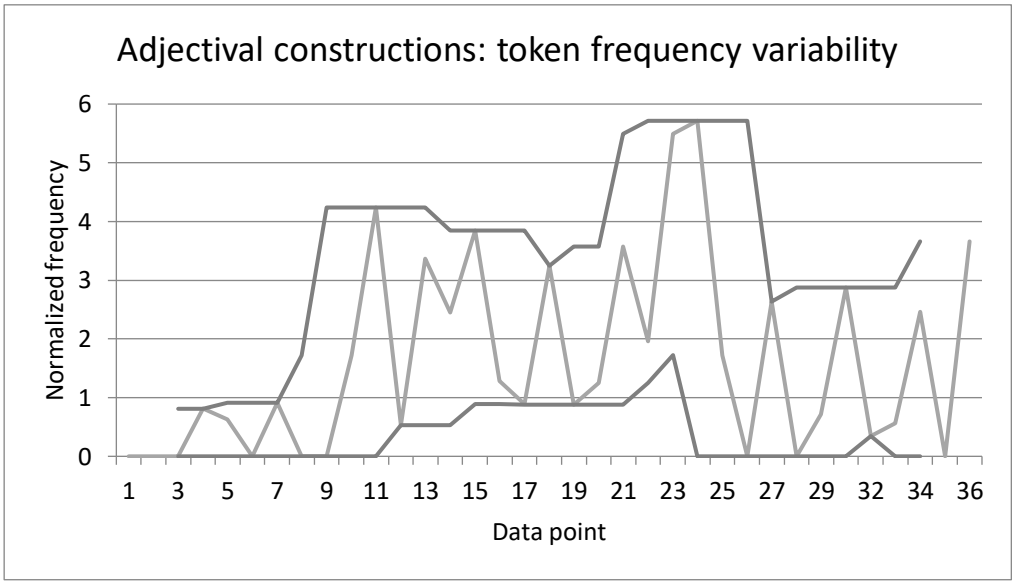


Figure 21 Variability in token frequency of adjectival constructions: Lena

These first two findings are very much in line with previous Complex Dynamic Systems (CDST)-oriented studies. The competitive relationship found in Lena's trajectory shows that in a complex, dynamic system - like a developing L2 - a change in one component has the potential to affect the whole system (Larsen-Freeman & Cameron 2008; Verspoor & van Dijk 2011). The second finding adds to the growing body of CDST-oriented research that shows that a high degree of variability can be detected in a (sub)system that is developing rapidly (Thelen & Smith 1994; Spoelman & Verspoor 2010; Tilma 2014).

The third main finding of the first substudy is that Lena developed one evaluative verbal construction (*haluta* 'want') from a relatively fixed, chunk-like

expression, whilst another, similar verbal construction (*tykätä* 'like') was initially more productive. This finding challenges the view posited in usage-based approaches to language learning. The way Lena's *tykätä* 'like' construction developed suggests that L2 learners' constructions can be relatively variable right from the start, supporting the idea of an 'alternative learning path' (Roehr-Brackin 2014: 771), which posits that L2 learners may develop relatively abstract representations quickly even though no lexical sequence is repeated (Langacker 2009: 633).

The second and third substudies were based on the findings of the first substudy. In Substudy 2, the aim was to investigate whether similar interactions of subsystems and the variability patterns in them could be detected in the other three learners' expressions of evaluation. Substudy 3 sought to test the usage-based assumption that L2 learners start with lexically specific, formulaic items. The objective of Substudy 3 was to find out whether other the learners developed their *tykätä* 'like' and *haluta* 'want' constructions from lexically specific or from more productive, abstract patterns.

5.3 Substudy 2: Dynamic patterns of competition and variability in four learners' expressions of evaluation

Lesonen, S., Steinkrauss, R., Suni, M. & Verspoor, M. Dynamic Usage-Based Principles in the Development of L2 Finnish Evaluative Constructions. Accepted for publication. Applied Linguistics.

Substudy 2 investigates the four learners' developmental paths in expressing evaluation. This study is based on the findings of the first substudy. This study aimed to investigate to what extent similar dynamic patterns of interaction and variability could be found in the development of the other three participants. The research questions were:

1. What types of constructions do the learners use to express evaluation and what types of interaction can be observed between these constructions?

2. What kinds of patterns of variability can be observed in the use of the different types of evaluative constructions?

Based on Substudy 1, two hypotheses were formulated.

H1: The learners will use mainly two constructions (verbal and adjectival) to express evaluations, and these constructions have a competitive relationship.

H2: When one construction type is being explored, this construction will show more variability compared to the other type.

The first hypothesis is supported. All four learners, Lena, Khadiza, Alvaro, and Jungo, used verbal and adjectival constructions almost exclusively to express evaluation and these two constructions showed a competitive relationship with each other or one type was used at the expense of the other at certain points in their development. All of the learners started off with verbal constructions, and during this phase the use of adjectival constructions was restricted. This is clearly visible for example in Khadiza's data (see Figure 22 and 23, Phase 1a). Later on, the four learners all had an adjectival phase, during which the use of verbal constructions became more limited. Moreover, during this adjectival phase the learners relied on verbal constructions that were already familiar to them from the earlier phases. For Khadiza, this phase occurred in the last third of the period of observation (Phases 3 and 4 in Figure 22 and 23). For some learners, this pattern is less pronounced in some phases and the learners differ with regard to the timing of this adjectival phase. Like with Khadiza, Alvaro's adjectival phase came at the end of the period of observation, while Lena and Jungo went through the adjectival phase immediately after the verbal phase. These findings are consistent with earlier CDST findings in other longitudinal studies showing that the development of one aspect of a linguistic system might happen at the expense of another aspect (Spoelman & Verspoor 2010; Tilma 2014).

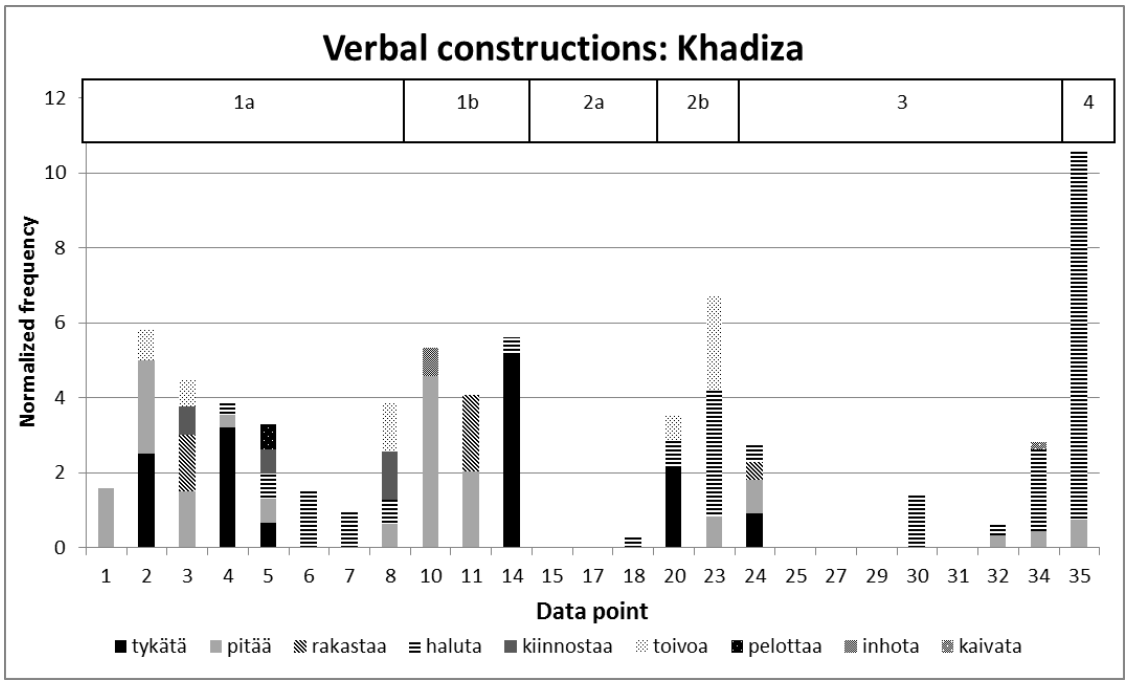


Figure 22 Use of verbal constructions over time: Khadiza

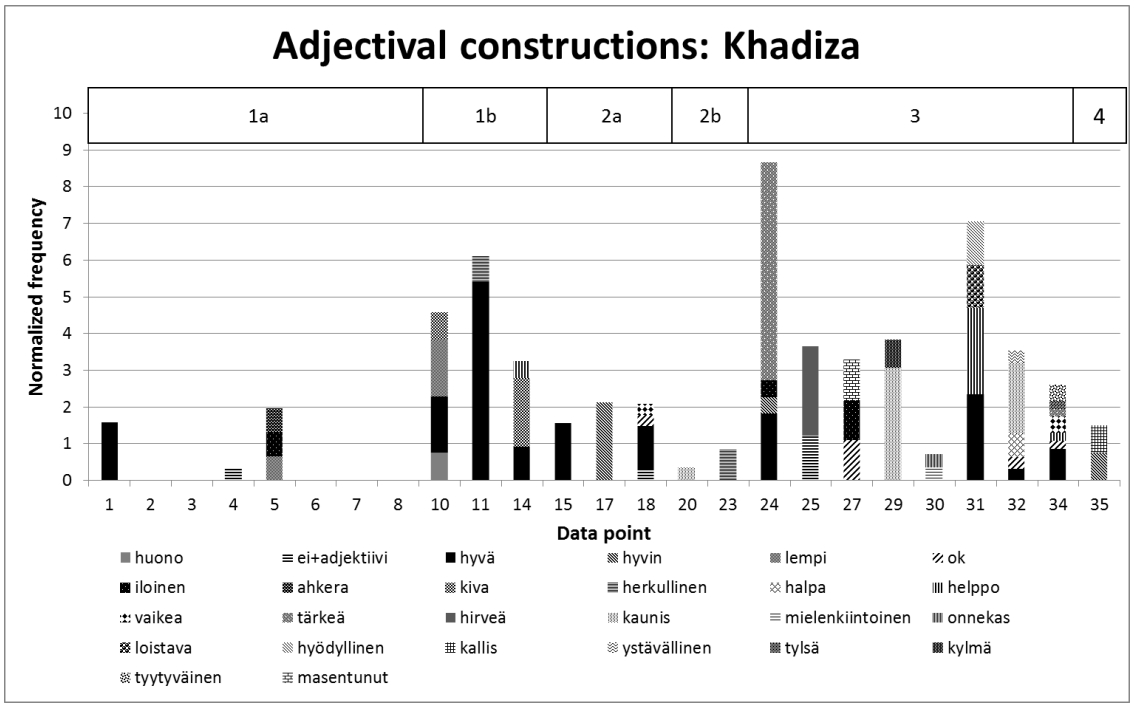


Figure 23 Use of adjectival constructions over time: Khadiza

The second hypothesis is partly supported. For Lena, Jungo, and Khadiza, in the verbal phase, variability was higher for verbal constructions and in the adjectival phase it was higher for adjectival constructions. For Alvaro, the variability patterns do not support the second hypothesis. In his initial verbal phase, adjectival

constructions exhibited more variability. However, in his adjectival phase in the last weeks, the variability was higher for adjectival constructions than for verbal constructions, which is in agreement with our hypothesis. This finding is consistent with the commonly held hypothesis in DCST approaches that a system that is undergoing changes and is in a phase of rapid progress shows more variability than a system in a phase of slower progress (e.g. Thelen & Smith 1994; Verspoor, Lowie & van Dijk 2008; Larsen-Freeman & Cameron 2008; van Dijk, Verspoor & Lowie 2011;). This can be explained by the fact that trying out new ways of expressing a certain meaning leads to instability of the system and hence to an increase in variability. Variability is therefore related to progress. As pointed out by Lowie and Verspoor, "without variability, no learning can take place" (2018: 202).

When the participants' expressions of evaluation were compared with the L1 speakers' control data, it was clear that L1 speakers use more varied linguistic means to express evaluation. The control data show that L1 speakers use verbal (Example 43, *pidän* 'I like'), adjectival (Example 44, *kaunis* 'beautiful', *rauhallinen* 'peaceful'), noun (Example 43, *tuskaa* 'pain'), or other (Example 45, *liian* 'too') constructions to express evaluation. One group of expressions was categorized as mixed because in these complex expressions it was difficult to pinpoint the evaluative lexical element, so the evaluative meaning was dependent on the whole expression (Example 46).

(43) ***Pidän*** *esimerkiksi tanssimisesta ja tenniksestä, mutta varsinainen kuntoilu tuottaa minulle* ***tuskaa*** *'*
'**I like** for example dancing and tennis, but proper fitness training causes me **pain**'

(44) *Suomi on* ***kaunis*** *ja* ***rauhallinen*** *maa*
'Finland is a **beautiful** and **peaceful** country'

(45) *Juna oli* ***liian*** *täynnä*
'The train was **too** full'

(46) *Työ oli vieläpä sellainen, jota kehtaa näyttääkin*
'The work was actually at such a level that I dare to show it to other people'

Even such a small amount of data shows that L1 speakers have a large repertoire of different constructions to express evaluation. In the L1 data, there are also many expressions that may be seen as "normal ways of saying things" (Langacker 2008: 84) or conventionalized ways of saying things (CWOSTs) (see Smiskova-Gustafsson 2013). L1 speakers of Finnish seem to prefer these ways of expressing a certain notion out of all of the ways that the grammar and lexicon of the language might allow. For example, expressions like *kuntoilu tuottaa minulle tuskaa* 'fitness training causes me pain' or *Suomesta löytyy jokaiselle jotakin* 'In Finland, there is something for everyone' seem like CWOSTs, just like *when I grow up* is a CWOST while the expression *when I am a grown up adult* is not (Smiskova-Gustafsson

2013). The results of this study show that L2 speakers' repertoire of these expressions is much smaller, and that relying on only two types of construction is a learner strategy. One reason for this is that L2 speakers' exposure to the language has been much more limited than L1 speakers' (see Smiskova-Gustafsson 2013).

5.4 Substudy 3: Variability as a sign of abstractness: The role of formulaic and abstract constructions in beginner learners' language

Lesonen, S., Steinkrauss, R., Suni, M. & Verspoor, M. Lexically specific vs. productive constructions in L2 Finnish learners. Accepted for publication. Language & Cognition.

Substudy 3 aimed to investigate the commonly held hypothesis in usage-based linguistics that L2 development, like L1 development, begins with the use of lexically specific, formulaic constructions that develop into more productive and abstract patterns over time (see Ellis 2002: 170). This study is based on the findings of the first substudy, which found that Lena's *haluta* 'want' and *tykätä* 'like' constructions developed in different ways. The *haluta* 'want' was rather formulaic initially, while *tykätä* 'like' was more variable and productive. This study aimed to answer the following research questions:

1. Does the development of the *haluta* 'want' and *tykätä* 'like' constructions of four Finnish L2 learners start with lexically specific expressions?

2. Do these initial constructions develop into more abstract patterns over time?

Two hypotheses were formulated:

H1: Learners start mostly with lexically specific constructions but constructions might also already be more abstract initially.

H2: Initial constructions develop into more abstract patterns but learners will show different levels of abstractness in their constructions at the end of the period of observation.

The first hypothesis is not supported. While some relatively formulaic constructions were found (Lena's and Jungo's *haluta* 'want'), learners mostly started off with more productive patterns (all learners' *tykätä* 'like' and Alvaro's and Khadiza's *haluta* 'want'). Table 16 summarizes the findings as regards the initial use of the constructions.

Table 16 All learners' *haluta* 'want' and *tykätä* 'like' constructions at the beginning of the data collection

Formulaic ⟷ Schematic			
Lena's *haluta*	Jungo's *haluta*	All learners' *tykätä*	Alvaro's and Khadiza's *haluta*
[*haluaisin matkustaa* +NP] *Haluaisitko matkustaa?*	[*haluaisin* + NFC] *En haluaisi opiskella*	[*tykkään* +NP]$_{L,J,A,K}$ [*tykkään* + NFC]$_{J,A,K}$ [*tykkäätkö* + NP]$_{L,J,A,K}$ [*tykkäätkö* +NFC]$_{A,K}$ [*en tykkää* + NP]$_{L}$ *Tykkäät?*$_{A}$	[HALUTA + NFC] [HALUTA + NP]

Both Lena and Jungo relied strongly on the first person singular conditional form at the beginning. Lena used only one verb in the non-finite clause and kept on reusing the chunk *haluaisin matkustaa* 'I would like to travel'. Jungo used several different non-finite clauses in the construction and his pattern was hence a bit more productive than Lena's. All of the learners were more productive with their *tykätä* 'like' constructions: every learner used two or three different forms of *tykätä* 'like' and combined them with different noun phrases (NP) and/or non-finite clauses (NFC). Alvaro's and Khadiza's *haluta* 'want' construction was even more productive. Several different forms of the *haluta* 'want' were combined with several different NPs and NFCs. These findings from Finnish L2 data show that the traditional assumption that also L2 learners usually start with formulaic expressions does not hold true. Some earlier studies have shown that both lexically specific and more productive patterns can be used in the initial phases of L2 learning (Eskildsen 2012, 2015; Roehr-Brackin 2014), and this study adds to this body of literature.

The second hypothesis is supported. All of the constructions develop toward a more productive schema but there are differences in the level of productivity between constructions and learners. Regarding the differences between the constructions, *tykätä* 'like' was conjugated in fewer forms than *haluta* 'want', but this difference may tell us more about the differences between these two verbs than the learning trajectories of the learners: *haluta* is more frequent than *tykätä* and it is also more versatile in terms of use. Regarding the differences between the learners, the continuum of productivity is shown in Table 17. Jungo's *haluta* + NP and Lena's *tykätä* + NFC were semi-schematic constructions: these patterns were only used with one form of the main verb.

Table 17 All learners' *haluta* 'want' and *tykätä* 'like' constructions at the end of the data collection

Formulaic ⟷ Schematic			
Jungo's *haluta* + NP Lena's and Jungo's *tykätä* + NFC	Khadiza's *tykätä* + NFC	Khadiza's *haluta*	Other constructions
[*haluavat* +NP]$_{J}$ [*tykkään* + NFC]$_{L,J}$	[TYKÄTÄ+ NFC]	[HALUTA + NFC]	[HALUTA + NFC]$_{L,J,A}$ [HALUTA + NP] $_{L, A}$ [TYKÄTÄ+ NP]$_{L,J,A,K}$

This finding is in line with Eskildsen (2009), who showed that an L2 English learner's linguistic inventory of the *can* construction consisted of interconnected utterance schemas, in other words, the learner did not develop a fully abstract construction. Khadiza's *tykätä* + NFC and *haluta* + NFC were used with more forms of the main verb than Jungo's and Lena's semi-schematic constructions shown in the first column in Table 15, but her repertoire was quite limited. She used fewer forms of *haluta* and *tykätä* than the other learners (see Other constructions in Table 15). Moreover, she recycled lexical material within the constructions more than the other learners did. This finding shows that prefabricated chunks play a role in L2 speakers' production not only in the initial stages but also later on (for a comparison of findings on proficient speakers, see Barlow 2018). Other constructions under investigation developed towards highly productive and abstract patterns: both the verb itself and the complements showed a lot of variability in the last weeks. This result seems to be consistent with Eskildsen and Cadierno (2007), who found that L2 learners might develop even fully abstract schemas.

5.5 Substudy 4: Variability and the effect of instruction in L2 Finnish: Developing the Finnish existential construction

Lesonen, S., Steinkrauss, R., Suni, M. & Verspoor M. Variability and the effect of instruction in L2 Finnish. Manuscript.

Substudy 4 investigates what kind of learning trajectories the learners show in expressing the meaning that is conventionally expressed with the existential construction in Finnish. The aim was also to investigate the interaction between individual learning trajectories and the pedagogical interventions.

The research questions and hypothesis are:

1) What kind of learning trajectories do the four learners show when expressing the meaning that is conventionally expressed with the existential construction in Finnish?

2) What kind of impact does the pedagogical intervention have on the four learners' use of existential constructions?

3) What kind of impact does the pedagogical intervention have on the four learners' accuracy in the use of e-constructions?

H1: There will be variation and variability: each learner will show an individual learning path, characterized by progress and regress and variability in the forms that are used.

H2: Because L2 learning proceeds individually, also the influence of teaching is expected to be different for each learner. However, we expect that after the explicit treatment the number of e-constructions will increase.

H3: We expect that the explicit treatment will increase the accuracy of the e-construction.

This study shows that the learners' trajectories exhibited different degrees of variability in terms of the different constructions used. Lena and Jungo were adventurous learners, who tried out many different constructions to express the targeted meaning. These constructions included unconventional constructions like *Jyväskylä on kaupunki paljon *siltan kanssa* 'Jyväskylä is a city with many bridges', **ole olemassa monta *sukkeja* 'exists many socks', and *se ei ole kylmä* 'it is not cold'. Alvaro and Khadiza, in contrast, were more limited: they used almost exclusively the Finnish existential construction, like *Bangladeshissa on paljon *ihmiset* 'There are many people in Bangladesh', to express this meaning. For all of the learners, the instruction increased the use of the conventional Finnish existential construction. For the adventurous learners, Lena and Jungo, there was an increase in the proportion of conventional existential constructions and a decline in the proportion of unconventional ones after the pedagogical intervention. For Alvaro and Khadiza, who were less variable in their ways to express existentiality, the pedagogical intervention seems to have led to their articulation of the idea of existentiality much more frequently. It therefore seems that these learners needed the instruction to point out the linguistic construction that is used to express the meaning of existentiality in Finnish.

In line with studies carried out within the framework of Complex Dynamic Systems Theory, this finding suggests that on the way toward more conventional ways of using the L2, learners need to try out different ways of expressing meanings (see e.g. van Dijk, Verspoor & Lowie 2011; Lowie & Verspoor 2019). When the most effective strategies have been found, less effective strategies can be discarded and the variability in L2 decreases, as was the case with Lena and Jungo. For learners who do not try out and discover a certain aspect of the L2 for themselves, like Alvaro and

Khadiza, an external resource, in this case instruction, might be needed to bring about changes in the system.

Regarding the accuracy of the existential construction, the form of the subject was the most inaccurate element of the construction for all learners. Although the pedagogical intervention put clear emphasis on the form of the subject (whether the nominative or the partitive case is used), the learners produced non-target forms also after the pedagogical intervention. This may be due to several reasons. First, whether the nominative or the partitive case is chosen for the subject within the existential construction depends on several issues (affirmative vs. negative construction, subject is countable vs. uncountable, subject is referring to definite vs. indefinite amount) and applying all these rules may be challenging for the learner. Second, if the partitive case is needed (in negation, or when referring to an indefinite amount of a countable thing), forming the partitive form, especially the partitive plural, is a complex issue in Finnish (see e.g. VISK § 81). Therefore, it is not surprising that the form of the subject within the existential construction has been shown to be problematic for L2 Finnish learners also in earlier studies (Ivaska 2010, 2011; Kajander 2013). Also the use of the partitive in general "remains a constant struggle" for L2 Finnish learners (Spoelman 2014: 55). The findings of this study suggest that since the rules for both the case choice within the existential construction and forming the accurate case (partitive plural) are complex, instruction should not focus on explaining the rules and analyzing the structures. Instead, it should be expected that extensive exposure and meaningful practice are needed to increase accuracy.

By starting the investigation from meaning, i.e. using the onomasiological approach, this study was able to show what linguistic means beginner L2 Finnish learners actually try out when developing their communicative competence. These findings suggest that instruction as an external resource can play an important role in causing changes in some aspects of the developing L2 system. For expressing a certain meaning in the conventional way, instruction can be a significant factor in learners' development. However, where accuracy is concerned, instruction seems to be less effective.

6 DISCUSSION

In this section, the findings of this study are discussed. In Section 6.1, the most significant findings of this study are summarized and discussed in relation to earlier research in the frameworks of CDST and UBL. Theoretical implications of this study are also discussed. Sections 6.2 and 6.3 present some pedagogical and methodological implications of this study. In Section 6.4, reflections on the study are presented and ideas for future research are shared. Section 6.5 provides final words of this Ph.D. dissertation.

6.1 General discussion on the findings and theoretical implications of this study

This study investigated the L2 Finnish development of four beginner learners from a dynamic usage-based (DUB) perspective, which is a combination of Complex Dynamic Systems Theory (CDST) and usage-based linguistics (UBL) (see Langacker 2009; Verspoor & Behrens 2011; Verspoor, Schmid and Xu 2012; Roehr-Brackin 2015). The investigation started out from the meanings that the four learners intended to convey. An onomasiological approach was therefore adopted with the aim of investigating what constructions learners of L2 Finnish use to express two central meanings, evaluation and existentiality, and how these constructions develop over time. Three aspects of the learners' development in expressing these meanings were studied: the interaction of subsystems in their language repertoire, variability in their constructions, and the abstractness of their constructions (with *haluta* 'want' and *tykätä* 'like') (see Figure 24). Interaction of subsystems and variability have been studied earlier in CDST-oriented studies, while abstractness has been investigated in UBL-oriented studies. Also in the current study, these different emphases of the two perspectives are visible within the DUB-framework.

Figure 24 illustrates the most important findings in the main areas of interest (the three overlapping circles). From the theoretical point of view, the onomasiological approach proved fruitful in shedding new light on both the

interaction of subsystems (see the uppermost circle) and the variability patterns (the circle in the middle) in the developing L2. Another important theoretical implication of this study is shown in the bottom circle: the study was able to show that the abstractness of L2 constructions can develop in two ways, either from lexically specific patterns or from relatively abstract schemas. As the abstractness of a construction is closely related to variability in the construction, it could be expected that this finding on a morphologically rich target-language will shed new light on the development of abstractness in L2 constructions. Let us now look at the main findings of the study and the theoretical implications in more detail.

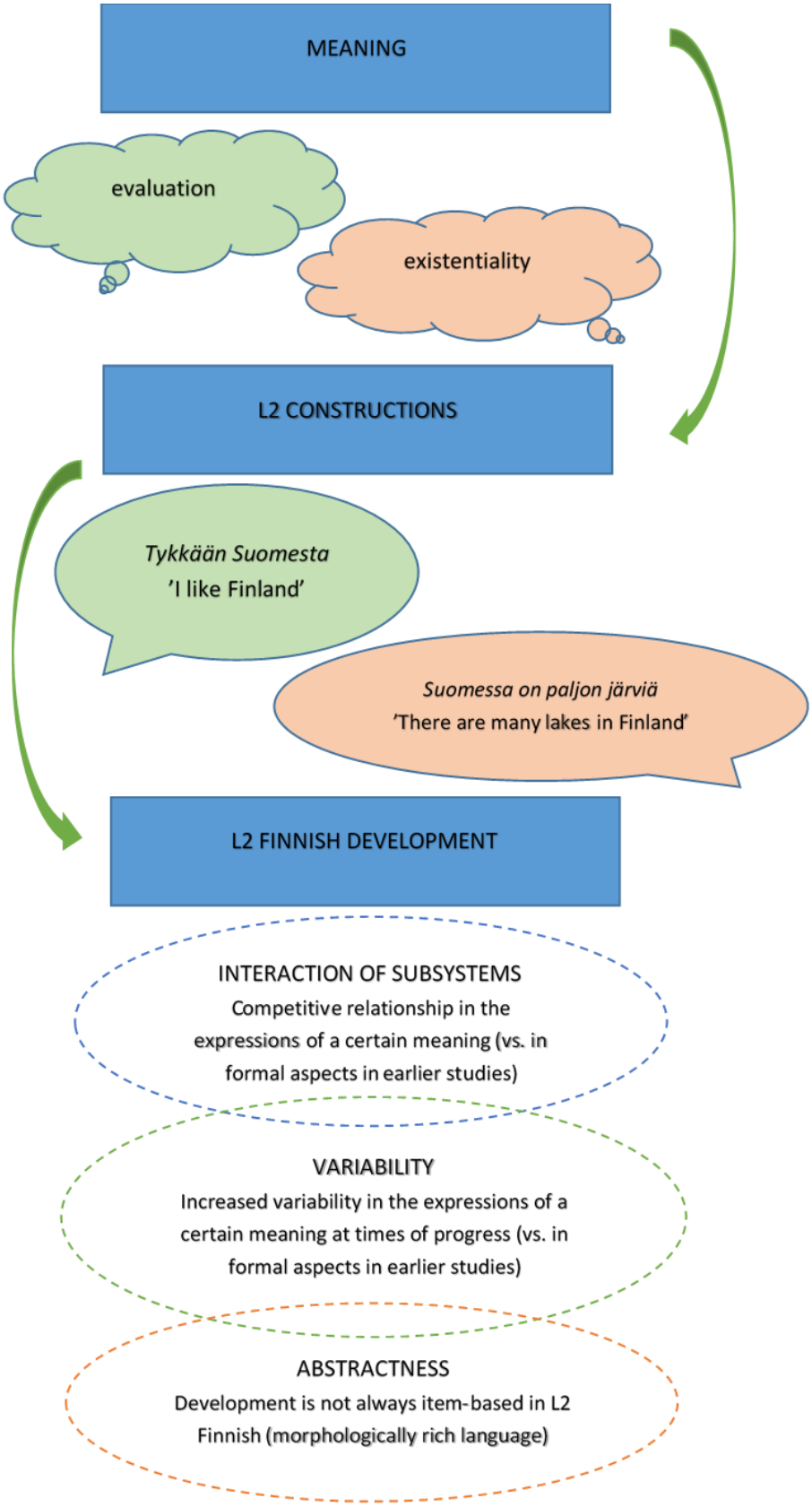


Figure 24 The main findings of the study

The first main finding of this study is that the two different linguistic means that were used to express evaluation were in a competitive relationship with each other. For all learners, there were phases in the use of verbal and adjectival constructions, and the use of one type happened at the expense of the other. In other words, in the expression of a particular meaning, there are points in a learner's development when one type of construction might be used to such an extent that another type temporarily suffers. This finding reflects the findings of Spoelman and Verspoor (2010) and Tilma (2014) - the two earlier studies on L2 Finnish development that have explicitly adopted the CDST framework – who also found some competitive elements in the developing L2 Finnish. For example, Spoelman and Verspoor (2010: 548) showed that there was a competitive relationship between noun phrase complexity and sentence complexity in one L2 Finnish learner's language: the growth in noun phrase complexity took place at the expense of the sentence complexity growth. Tilma (2014: 164) found that for one learner, sentence complexity and accuracy were in a competitive relationship: increased complexity was related to decreased accuracy. In sum, competitive patterns have been detected in the developing L2 when formal aspects have been studied. The current study was able to show that competitive interaction also exists in learner language when the starting point of the investigation is meaning, not form. When a certain meaning is being expressed, different types of constructions may compete with each other. These competitive patterns detected in both form and meaning give us important insights into how an L2 (in this case, Finnish) is used when the learner still has only limited resources. These findings also have some implications for L2 pedagogy, which will be discussed in Section 6.2.

The second main finding of this study is that the L2 system showed high degrees of variability when the learner was discovering and trying out different ways of expressing a particular meaning. In expressions of evaluation, when in the early stages of development all learners used verbal constructions more than adjectival constructions, these verbal constructions showed more variability in token frequency than the adjectival constructions. When, in contrast, adjectival constructions were used, they showed more variability, and at the same time the variability in verbal constructions decreased. This finding too resonates with both Spoelman and Verspoor (2010) and Tilma (2014). Both of these studies detected a higher amount of variability in complexity and accuracy in the early stages of learning and a lower amount of variability later on. With expressions of existentiality, the present study shows that some learners are more adventurous than others in trying out different ways of expressing this meaning, and their language therefore exhibits more variability. Similar kinds of differences between learners have been proposed by Hulstijn (2007), who suggested that some L2 users tend to produce a small amount of accurate language (with a narrow range with regard to quantity but great depth with regard to quality) while other learners tend to produce a lot of linguistic material with a relatively low level of accuracy (broad quantity but little quality). It seems likely that different L2 learners will take different kinds of approaches to L2 use: there are adventurous ways of using the L2 and more cautious

or calculating ways. The relevance of this study lies in the fact that adventurous and less adventurous learners could be identified when the L2 was studied in its own right. It was shown that more adventurous learners managed to come up with different kinds of unconventional constructions to express existentiality while those less experimentally inclined expressed this meaning mainly with the conventional existential construction.

In relation to variability, it was also found that those learners whose language exhibited more variability in existential constructions had higher proficiency gains overall than the learners with more stability in their language. Those learners who displayed less variability in their language also seemed to make more use of the instruction, because they started to express the meaning of existentiality much more frequently after the main pedagogical intervention that pointed out the conventional existential construction. The learners with more variability in their language had already tried out different ways of expressing this meaning before the pedagogical intervention. Although this finding needs to be interpreted with caution because of the limited amount of data, it shows that high degrees of variability may be related to future success in L2 development, as pointed out by Lowie and Verspoor (2019), Chan, Verspoor & Vahtrick (2015), and Huang, Steinkrauss, and Verspoor (in prep.). Increased variability in L2 forms is also related to the idea of complexity being a precursor to accuracy in L2 development: target-like forms can be found by trial and error (Martin, Mustonen, Reiman, & Seilonen 2010).

Regarding the interaction and variability patterns in L2 Finnish, it should be noted that even when the point of departure for the investigation in the current study is different than in Spoelman and Verspoor (2010) and Tilma (2014), similar patterns of interaction and variability could be found. A competitive relationship and greater variability at times of progress seem to be general features of a developing L2, because they were detected when different subsystems, although nested, were studied. In Spoelman and Verspoor's (2010) and Tilma's (2014) studies, the subsystems of complexity and accuracy were analyzed, and in this study, different types of constructions that were used to express the same meaning were analyzed. These three studies support the view that the developing L2 Finnish is a complex, dynamic system, in which a change in one aspect - whether it is a holistic, formal aspect such as complexity and accuracy or a meaning aspect such as the constructions used to express the same meaning - can influence other aspects, and possibly the whole system as well. The findings of these three studies also add to the growing body of research in the context of CDST that indicates that variability is necessary for developing a new skill: the learner needs to try out different strategies and modes of behavior in order to perform the task in the best possible way.

The third area of interest, the abstractness of L2 constructions, had not previously been studied in a longitudinal setting for the Finnish language, and there are still relatively few findings on this for other morphologically rich languages (although see Roehr-Brackin 2014). The findings on the development of abstractness show - as assumed in usage-based approaches to language learning - that L2 constructions develop toward more abstract and productive patterns over time and that some constructions develop from item-based constructions. This kind of item-

based learning path, from lexically specific items toward more productive patterns, has been considered the default for both L1 and L2 learners. There is convincing evidence that this learning path applies for L1 development (MacWhinney 1975; Tomasello 1992, 2003; Dąbrowska & Lieven 2005; Lieven, Salomo & Tomasello 2009). There are also studies that show that this learning path applies for L2 learners as well (Mellow 2006; Eskildsen 2009, 2012, 2018; Roehr-Brackin, 2014). The present study adds to this growing body of research. However, the findings of this study show that L2 learners do not necessarily use lexically specific items first, but the development may begin with the use of relatively abstract patterns. This finding is in line with, for example, Roehr-Brackin (2014) and Eskildsen (2012; 2015), who found that some of their participants' constructions were relatively abstract right from the start. The fact that Finnish is a morphologically rich language may play a role in this developmental feature. In L1 learning, it has been shown that a child learning German, a morphologically rich language, was able to develop abstract schemas for WH-question formation much more quickly than children learning English, a morphologically poor language (Steinkrauss 2009). This was explained by the fact that in a morphologically rich language the learner is exposed to a greater number of different exemplars in the input, allowing faster schematization. Another reason for rapid schematization could be the L1 system that the L2 learner already has. As e.g. Cadierno (2004), Cadierno and Ruiz (2006), and Smiskova-Gustafsson (2013) have shown, the L1 and its constructions play an important role in the construction of L2 forms. L1 may enable positive or negative transfer. Positive transfer could be expected if there is a similar construction in the learner's L1. Then the learner could possibly develop a productive construction relatively quickly. However, the findings of this study are mixed in this respect. Lena and Alvaro, who both have the want + NFC construction in their L1 (German and Spanish), did not develop the corresponding Finnish construction in a similar way. Lena started off with formulaic expressions while Alvaro had a more productive pattern. More dense, longitudinal data are needed to investigate this question further. Instruction may also play a role, and it is possible that the participants in this study developed explicit knowledge about the constructions and the functions of their parts (for the role of explicit knowledge in schematization, see: Roehr-Brackin 2014). The role of instruction in the development of abstractness will be discussed in more detail in Section 6.2, where pedagogical implications of this study are presented.

As described above, there are several factors that play a role in the development of the abstractness of L2 constructions. However, caution should be applied when explaining the reasons for individual learners' different learning paths. The current study aimed to describe the development of L2 Finnish and, in line with a CDST approach, it limited itself to this descriptive task (see e.g. Larsen-Freeman & Cameron 2008; de Bot & Larsen-Freeman, 2011). If we acknowledge the CDST assumptions about the potential of initial conditions as well as the interaction of subsystems to result in non-linear development, predicting the direction of changes becomes problematic, if not practically impossible (Larsen-Freeman & Cameron 2008). In other words, isolating one external or internal factor, such as the L1, and investigating its impact, is very difficult. However, it can be assumed that some

variables have a potential to impact certain changes more strongly than other variables, and for future studies it is important that we can indicate the variables that are most likely to play a role in development. This issue will be discussed in Section 6.4.

To summarize the theoretical implications of this study, the current study contributes to our understanding of L2 as a complex dynamic system by showing that competitive elements and increased variability could be found also when the investigation started from the meanings that learners convey. In previous CDST-oriented studies, aspects of form, such as complexity and accuracy, have often been the starting point. In other words, those studies have looked at different kinds of subsystems of the L2 from those examined in the current study. (See e.g. Caspi 2010; Chan, Verspoor & Vahtrick 2015; Lowie & Verspoor 2019; Lowie, van Dijk & Verspoor 2017; Penris & Verspoor 2017.) Therefore, the present study makes a useful contribution in the context of CDST by showing that competition and increased variability may be general characteristics of the developing L2. Moreover, this study makes a relevant contribution to the field of L2 Finnish development because CDST is a relatively new theoretical framework in this field. This study has also been able to show that abstractness of L2 constructions may develop in two different ways, and therefore the current study contributes also to UBL approaches. Moreover, as one possible reason for the rapid schema formation of the L2 constructions could be the rich morphology of Finnish, this study emphasizes the relevance of studying the learning of morphologically rich target languages in the UBL framework and has thus important implications for usage-based theories.

The findings of this study have been discussed in relation to different emphases of CDST and UBL because these two approaches concern different kinds of changes in the developing L2 (CDST: interaction of subsystems and variability, UBL: abstractness of L2 constructions). As discussed above, the current study has been able to contribute to both theoretical frameworks. It also shows - in line with e.g. Roehr-Brackin (2015) and Behrens and Verspoor (2011) - that regardless of their different emphases, CDST and UBL are compatible theories when L2 development is studied. As assumed in both theories, it was shown in the present study that L2 development is a highly individual process. Changes in L2 emerge as the learner uses the L2 in social interaction. In CDST terms, the learner is making use of external resources, and in UBL terms, the learner is participating in usage events. Therefore, these perspectives view L2 development fundamentally as a similar kind of process. Moreover, their different emphases can be seen as complementing each other: while CDST mainly investigates changes in L2 from a quantitative point of view, UBL is a linguistic approach. Therefore, a DUB approach is a fruitful framework for studying language development.

One important point regarding the findings of this study is their generalizability. It is commonly accepted by applied linguists that findings cannot be generalized from groups to individuals and vice versa (for a recent discussion, see Molenaar 2015; Lowie & Verspoor 2019). From a complexity theory point of view, Larsen-Freeman and Cameron (2008) point out that

> … no two situations can be similar enough to produce the same behavior; thus predictability becomes impossible.[19]

Larsen-Freeman and Cameron (2008) argue here that since language development can be seen as emerging through self-organization, we need to revisit the idea of prediction in development. As has already been shown in a considerable amount of previous research, this study has shown that L2 learning paths are individually owned (see e.g. Larsen-Freeman 2006; Verspoor et al. 2008; Caspi 2010; Vyatkina 2012; Bulté 2013; Murakami 2013; Tilma 2014; Chan, Verspoor & Vahtrick 2015). Based on the findings of this study, it can, however, be suggested that there are some general principles in learning that apply at group level, namely competitive interaction between subsystems, variability, and the ways abstract L2 constructions can be developed. A competitive relationship is not necessarily visible in all learners even in similar contexts, and the timing of the competition may very well be different for individual learners, as was the case in the current study. However, detecting these patterns can help us to understand the process of L2 development and give some insights that would be helpful in L2 pedagogy. These implications for L2 pedagogy will be discussed in the next section.

6.2 Pedagogical implications

Since the participants in this study were learning Finnish in an instructional setting, the fourth research question concerned the interaction of individual learning trajectories and pedagogical interventions. As mentioned above, generalizations cannot be made about learning trajectories, and the same applies for the impact of teaching. However, as the findings of this study show that teaching may impact learning trajectories, the pedagogical implications will be discussed in this section from the point of view of the three main interests of this study: the interaction of subsystems, variability, and the abstractness of L2 constructions.

The instructional setting of the participants in this study was primarily meaning based: the principles of functional L2 pedagogy were applied (see e.g. Aalto, Mustonen & Tukia 2009; Mitchell, Myles & Marsden 2013: 188-219). This approach emphasizes the social function of language in the learning process. Finnish was learned in and for the purposes of interaction, and the focus was on how meanings can be conveyed in Finnish. From time to time, there was an explicit focus on linguistic forms. However, the idea was to expose learners to the target construction before the structures were analyzed with them (for the advantages of this approach, see VanPatten & Cadierno 1993; VanPatten & Oikkenon 1996). Students were also given an active role in locating and analyzing the structures in authentic spoken and written text samples. This kind of functional pedagogy suits well with the onomasiological approach adopted in the study: both the instruction and the study

[19] Larsen-Freeman & Cameron, 2008, p. 16

focused on how meanings are conveyed. It is somewhat surprising that studies that trace the L2 development of learners acquiring the language through mainly meaning-based programs have still given a relatively large amount of attention to structural features of the L2, e.g., to complexity, accuracy, and fluency measures (see e.g. Piggott 2019; Rousse-Malpat 2019). By focusing on the linguistic means that learners use to express a certain meaning, as in the current study, we can get new insights into the implications of L2 development for meaning-based, functional L2 pedagogy.

One major finding of this study is that the different linguistic means that learners use to express evaluation, namely verbal and adjectival constructions, are in competitive interaction with each other at certain stages of development or one type is used at the expense of the other. This raises the question of how teaching should react to this kind of interaction in learner language. This was not explicitly investigated in the present study, so this discussion on it can be no more than speculative. Two kinds of approach seem possible when there are competitive aspects in the learner language: one is to focus on the aspect that is progressing and help that aspect to progress even further, while the other would be to try to deliberately support the aspect that is not under rapid development at that time.

The first option seems possible, at least from the DCST point of view. As was the case in this study, the variability patterns were compatible with the interaction patterns for all learners: the aspect that was leading the competition and hence in progress (verbal constructions) showed more variability than the aspect that was falling behind (adjectival constructions). Larsen-Freeman and Cameron (2008) argue that a pedagogical intervention might be more effective at times of increased variability. They propose that a system undergoing a high degree of variability can be moved more easily to a new state than a more stable system. This is a crucial point for functional L2 pedagogy: the teacher should be able to structure the contents of teaching in such a way that aspects of the learner language that are in a state of flux are given sufficient attention (Aalto, Mustonen & Tukia 2009: 410). It could therefore be suggested that instruction should emphasize the aspect that is developing and is on the move, so to speak. The findings of this study support this idea: when, at the beginning of the period of observation, the learners were going through the verbal phase in their development, adjectival constructions were also presented in the learning material and used in class. However, the learners seemed to be unable to pick up these constructions at that time, which suggests that it might be better to respect learners' limited resources and focus on whatever aspect learners are then using and developing. Whether this kind of approach is feasible in a second and foreign language classroom is of course debatable. Because of highly individual learning trajectories, it might be difficult for the teacher to support the individual learners by focusing on the aspect that is in a state of flux.

The pedagogical implications with regard to the development of abstractness in L2 constructions are related to the token and type frequencies of the target construction (see e.g. Bybee 1995; Ellis 2005: 336; Eskildsen 2009: 336), and noticing (Ellis 2005). A dynamic usage-based approach emphasizes that languages are learned when they are used for purposes of interaction: L2 constructions emerge from usage

events (see e.g. Langacker 2009). The L2 classroom can offer a good time and place for these meaningful interactions. From the perspective of usage-based linguistics, the token and type frequencies in these classroom interactions (and in input in general) have a significant impact on L2 development. The construction is likely to be stored as a lexically specific, formulaic item if its token frequency is high and the type frequency low. If the type frequency is high, i.e., different constructions are encountered, the construction is more likely to develop into an abstract schema. (Bybee & Slobin 1982; Bybee 1995; Tomasello 2003: 107; Ellis 2005: 336; Evans & Green 2006: 118; Eskildsen 2009: 336.) In the context of this study, the information available about instruction is restricted to the researcher's observations and notes, and the learning material, so exact calculations of the token and type frequencies of the classroom interactions cannot be made. However, there is one particular instance of a *haluta* 'want' construction (examined in Substudy 3) that provides some interesting insights into the impact of instruction. This construction had a relatively high token frequency and a relatively low type frequency in a classroom activity at the beginning of the study, and it seems likely that at least one learner's (Lena's) construction has its roots in this exercise. In the exercise, students had to ask each other where in Finland they would like to travel to (*Mihin haluaisit matkustaa Suomessa?*). Students were given a model of the conventional, target-like answer (*Haluaisin matkustaa x:ään* 'I would like to travel to x'). A significant (but not necessarily surprising) observation from the pedagogical point of view is that only one participant used this construction frequently after the pedagogical event; the others did not do so.

This finding confirms the assumption that the impact of instruction (or any other external resource) in individual learners is unpredictable even in the short term (see e.g. Larsen-Freeman & Cameron 2008; de Bot & Larsen-Freeman 2011). It also gives further support to the assumption that a construction with high token frequency and low type frequency may be stored as a lexically specific unit. Another interesting observation in this particular learning event is that the focus of that exercise was not to practice the *haluta* 'want' construction but the use of local cases. Also this finding shows how unpredictable the impact of teaching is: students do not necessarily learn what the teacher has set as a learning goal (see e.g. Rauste-von Wright, Wright & Soini, 2003).

This observation about individuals' different responses to instruction is related to the term affordance, which is also a key aspect of functional L2 pedagogy (see e.g. Aalto, Mustonen & Tukia 2009; Lehtonen 2013). According to van Lier (2000), the term affordance refers to the relationship between the (social) environment and the learner. As opposed to the term input, it emphasizes the learner's active role in noticing and using the linguistic (or other kind of) material as a resource for learning. Instruction as an external resource (as described in the CDST framework, see e.g. de Bot and Larsen-Freeman 2011) may aim to trigger a change in the learner's developing language system, but in the end the learner needs to be active in transforming the given input into a resource for learning. Therefore, the same exercise in class may offer different learners different kinds of affordances: what becomes an affordance depends on the learner's needs (whether something is

relevant for him/her at that point) and level (whether the linguistic material is understandable).

Concerning the development of abstractness in L2 constructions, the findings of this study support the claim that explicit instruction may be beneficial in the process of noticing (see e.g. Ellis 2005), more specifically, in noticing the open slots within a certain construction. One of the learners moved from item-based existential constructions (*siellä on* 'there is' and *siellä oli* 'there was'[20]) toward more variable patterns after the pedagogical intervention. This finding suggests that instruction can help learners notice open slots. This finding, together with the observation that another of this study's learners, Jungo, partly relied on the item-based *siellä on* x + *place* 'there is x + place' and place + *siellä on* x 'place + there is x' constructions at the beginning, raises the question whether instruction on the Finnish existential construction could make use of these exemplars when the construction is introduced. The data of this study cannot give the answer to that question, but as some learners seemed to rely on this *siellä* 'there' construction, it could possibly be used as a starting point when the Finnish existential construction is being taught.

Another issue related to instruction on the Finnish existential construction is the timing of pedagogical interventions. The Finnish existential construction is in many ways a peculiar structure (VISK § 893) and it has been shown that especially the form of the subject causes L2 learners difficulties (Kajander 2013). Probably for these reasons, it is a structure that has not traditionally been taught in the early stages of L2 Finnish learning. However, as Aalto, Mustonen and Tukia (2009) pointed out, the complexity of the target structure is not necessarily a key factor in determining the timing of instruction: more important are the learners' communicative needs. The findings of this study show that some learners felt a clear need to express existentiality a long time before it was presented in class: various unconventional linguistic solutions were found in the data. Although the data of this study are admittedly restricted in this respect, it could be suggested that for some L2 learners, pointing out the existential construction and its function - without paying too much attention to the form of the subject – would be beneficial at earlier phases in their development. This idea resonates with the point made earlier, that a pedagogical intervention may be more effective when the target construction is 'on the move' in learner language (see Larsen-Freeman and Cameron 2008; Aalto, Mustonen & Tukia 2009).

6.3 Methodological implications

In this section, some of the methodological implications of this work are discussed. First, the implications of the data selection method, the onomasiological approach, are described, and after that, some of the implications of the methods of data analysis.

[20] The first element in the Finnish existential construction is a noun phrase referring to a place. The deictic *siellä* 'there' can be used in this position but often more specific words are used.

It is widely accepted by researchers studying L2 development that a central aspect of L2 learning is the development of the learner's ability to express his or her ideas in the L2 (see e.g. Mitchell et al. 2013: 188-219). The development of this ability can be studied from different points of view. For example, it has been suggested that an L2 speaker's ability to express himself or herself increases over time as his/her complexity, accuracy and fluency (CAF) improve (see e.g. Skehan 1998; Ellis 2003, 2008; Ellis & Barkhuizen 2005; Housen & Kuiken 2009; Housen, Kuiken, & Vedder 2012). As this kind of point of departure in research admittedly reveals important features of L2 development, it does not throw any light on how L2 learners express their own ideas on their own terms (for conditions of exercising voice, see Segal, Pollak & Lefstein 2016). One methodological choice made in this study, namely starting the investigation of learner language development from meaning rather than form and therefore using the onomasiological approach, is an attempt to shed new light on this.

This study shows that beginner learners express two central meanings - evaluation and existentiality - using various linguistic constructions. With the onomasiological approach, it is possible to investigate how these constructions reflect the learner's communicative needs (what is being expressed) as well as the learner's history, goals and abilities at that time (how something is being expressed: learners' make-do solutions (Larsen-Freeman 2013)). These two aspects - what is being expressed by the learner and how it is being expressed - can of course give us valuable insights into learning as well as tools to develop pedagogical practices, but studying them also has some more fundamental value. By starting the investigation from meaning, we give pride of place to the L2 speaker and value the L2 speaker's perspective. Taking this approach has also given the opportunity to study the L2 in its own right: the starting point is not normative. If the investigation is started by defining what form the learner language construction must take for inclusion in the analysis, there is a risk that important aspects of the learner language will be lost.

With regard to the data analysis, in this study, the interaction of subsystems was investigated with both quantitatively and qualitatively. This dual approach proved fruitful. When the interaction of expressions of evaluation was studied using a quantitative approach, namely the smoothing technique (see Peltier 2009), it turned out that the token and type frequencies of verbal and adjectival constructions showed a competitive interaction at certain phases of development. When the learners' constructions were analyzed qualitatively, the competitive pattern was even more evident: when the new type of construction (adjectival constructions) was being explored, the learner relied on the other, familiar verbal constructions. Without the qualitative investigation, the grounds for interpreting a competitive interaction would be weaker. It is possible that even though the token and type frequencies of verbal constructions might decrease, the constructions that the learner is using could still be new to them. In this situation, it could not be argued that there is a competitive relationship between the two different linguistic means that are used to express evaluation.

Two different approaches were taken to the analysis of the variability patterns. With expressions of evaluation, quantitative methods were used. This study was able

to show that two quantitative but descriptive methods, the moving min-max window and variance, are compatible, because they revealed the same kinds of variability patterns in virtually all cases. With expressions of existentiality, on the other hand, the viewpoint was explorative in nature. To investigate the patterns of variability in expressions of existentiality, the onomasiological approach was used: the aim was to investigate the kind of constructions (both target- and non-target-like) that learners use to express the meaning that is conventionally expressed with the existential construction in Finnish.

Earlier investigations on variability in L2 have used mainly quantitative measures (e.g. the moving min–max window, Monte Carlo analysis (van Geert & van Dijk 2002; van Dijk, Verspoor & Lowie 2011)), but the actual linguistic means that L2 learners use have not hitherto gained attention in the framework of CDST. As CDST argues that variability increases in periods of progress because new strategies are being tried out, the new approach taken in this study is very much in line with what has been suggested about the role of variability in development. When something new is learned, new strategies and modes of behavior are tried out (Thelen & Smith, 1994). The method used in this study proved useful in this respect.

6.4 Reflections on the study and ideas for future research

In this section, I offer some reflections on the study and evaluate the choices made during the process of carrying it out, starting from the data collection and ending with the data analysis.

The dynamic usage-based (DUB) approach emphasizes the importance of a longitudinal, time-series, case study perspective. However, the denser and more long-term the data collection is, the more challenging it is to carry out. The optimal balance between the number of participants, the frequency of the points of data collection, and the length of the period of observation depends on the aim of the study, but naturally also on the resources available for conducting the data collection. The load of the data collection needs to be reasonable for the participants, as does the amount of data to be analyzed with the resources available.

The data of this study were collected weekly over a period of nine months with four learners. The data set reveals interesting insights into L2 Finnish development, but at least from the point of view of usage-based assumptions, even more dense data at the beginning of the learning process might have given a more precise picture of the use of specific constructions. However, the dense longitudinal data of this study are valuable in the context of L2 Finnish learning studies: similar kinds of data are still scarce (although see Spoelman and Verspoor 2010 and Tilma 2014). One important point about the data of this study is that the learners' development can be related to instruction, because I was teaching the participants in the first half of the study and observing their lessons in the second half. Although this turned out to play a smaller role in the study than initially envisaged, this kind of comparison of

individual learning trajectories and instruction has not been a feature of earlier studies on L2 development.

To secure the longitudinal data collection, the data were first collected with more students. The participants in this study form the entire group of students who took all three consecutive language courses; originally some 20 students were followed. Consequently, some of the data collected were not used, but all of the data from the four learners were used in the analysis, and in this respect, the procedure for the data collection can be considered economical. The four participants can be considered highly motivated and successful Finnish learners, because in order to continue from one course to the next they needed to achieve at least a grade 3 (which means Good on the scale from 1 to 5) for each course. So the participants were successful learners of Finnish studying in the context of higher education. All of this should be borne in mind when interpreting the results of this study.

Since the participants were selected for the study on the above-mentioned grounds, their background factors, for example their L1 or their length of residence in Finland before the study began, could not be controlled for. This can be seen as a limitation of the study: firmer conclusions about the factors playing a role in L2 development could be drawn if the participants had had more similar backgrounds. On the other hand, explaining and generalizing is problematic in any case study, as has already been discussed above. The setting of this study was not experimental in nature: the aim of the study was to investigate how the participants' use of L2 Finnish constructions to express certain meanings developed over time, and the research setting used did not - and was not meant to - allow full control of different variables.

The data of this study were collected by various methods: both spoken and written data were used and the spoken data consisted of both monologues and dialogues with both L2 and L1 speakers. This variation in the data collection methods can be seen as a limitation because there were a number of factors that could not be controlled for but that may have played a role in the participants' language use. However, I actually do not view this as a limitation. The points of data collection (both written and spoken) are usage events themselves, and it is important to capture changes in the constructions in both written and spoken language. In fact, I see the variation in the data collection methods as a strength of the setting of this study: as the aim was to investigate the development of the learners' constructions in more or less natural language usage events, using only one type of data (e.g. only spoken data produced in a monologue) would have been a mistake. In the setting of the current study, the points of data collection reflected the variable situations in which L2 learners may use the target language in social interaction in real life (vs. data collection in a laboratory setting). Moreover, using both written and spoken data resulted in more data points being available and the data being denser, which has allowed a more detailed and precise description of the learners' development. Because of the various methods used in the data collection, task and priming effects are possible. Since these effects do not have a great impact on the results (these issues concern just individual points of data collection), they are not discussed here but they are discussed in the research articles for each substudy.

For the data selection, an onomasiological approach was used, which proved a fruitful approach, as discussed in the previous section (6.3). However, it was not trouble-free. How to define 'evaluation' and what constructions should be included in this category turned out to be quite problematic. The decision to use a panel of proficient Finnish-language speakers to evaluate whether the expressions were evaluations or not can be seen as a good one: the panel's judgements made decisions on the inclusion or exclusion of (a few) problematic expressions more reliable.

As for the methods that were used to analyze the interaction and variability patterns, the methods themselves and the results gained with them were reliable for at least two reasons. Firstly, the results of interaction and variability patterns are compatible: the subsystem that was leading the competition (the linguistic aspect that was under development) exhibited more variability. This finding is in line with the theoretical assumptions. As expected from a CDST perspective, competitive elements were found, and the aspect that was pronounced exhibited more variability than the other aspect. Secondly, the variability analyzed by means of both the moving min–max method and variance showed the same patterns, which supports the reliability of the investigation.

For the development of abstractness, the findings are also in line with the theoretical assumptions: both item-based and non-item-based learning paths could be identified. As pointed out earlier, the setting of this study did not allow for any explanation of the role of, for example, the L1 in the different developmental paths, and this important issue is something that could be studied in the future. A suitable research setting for this kind of investigation would include language learners from different language backgrounds, preferably with monolingual speakers from morphologically both rich and poor languages, with otherwise similar background factors, so that the initial conditions of the participants would be as alike as possible.

In this study, the cognitive aspects of L2 development were emphasized. Although these issues are relevant for our understanding of L2 learning, during the process, I have become more and more convinced of the importance of the social aspects of learning, and I am rather dissatisfied with the amount of space given to social aspects in this study. Although both CDST and UBL (at least in principle) emphasize the role of social aspects in language development – in these views, the language is seen as emerging from social interaction – many studies, like the current one, have in fact focused on cognitive aspects of development (although see Eskildsen (2012), who uses conversation analysis when investigating usage-based assumptions). The research project in which I continue to do research - Building Blocks, Developing Second Language Resources for Working Life[21] - aims to bring the social and cognitive aspects of learning closer together. This will allow me to use the concept of distributed and embodied cognition fruitfully in the investigation of L2 development, for example.

One important ethical question that has not yet been discussed is the fact that this study, like so many earlier studies, focuses on so called WEIRD learners: **w**estern, **e**ducated learners in **i**ndustrialized, **r**ich, and **d**emocratic countries. I have asked

[21] University of Jyväskylä (funded by the Academy of Finland, project leader Minna Suni)

myself whether it is indeed these learners whose language learning needs to be investigated and documented, or whether there is a group whose language learning is in greater need of attention. During my future career, I want to reflect on this issue more before starting the data collection. However, I see that the findings of this study do not apply only to highly educated L2 learners, but the same principles of competition, variability, and abstractness are likely to apply also to learners from different backgrounds. It could be argued that for example the competitive interaction between the different linguistic means used to express evaluation could be even more evident for learners with more limited resources, e.g. LESLLA learners (Literacy Education and Second Language Learning for Adults). Of course, different ethical questions need to be addressed in research when participants in vulnerable positions are recruited for studies.

6.5 Final words: toward adventurous language learning and teaching

This study has investigated the development of four L2 Finnish learners in their use of constructions to express certain meanings. The findings show that L2 learners may be creative in their ways of expressing their ideas: even with very limited L2 resources, the learners in this study managed to convey relatively complex meanings. However, on their way toward more conventionalized and target-like expressions, the learners were discovering and trying out how Finnish actually works. This was manifested by variability in the L2. In line with Complex Dynamic Systems Theory, this study suggests that variability is functional for L2 development: learners need to try out different ways to express meanings and development often takes place by trial and error. Being adventurous in using the L2 may be the most effective way to develop. One example of adventurous use of the L2 was Lena's use of a noun phrase construction to express evaluation at the end of the data collection period. Like the other participants, Lena had used almost exclusively verbal and adjectival constructions until then, but in the very last data point she tried out a new way of expressing her positive evaluation of her experience of learning Finnish, with a noun phrase (Example 47).

(47) *Se oli seikkailu minulle, mennä *tuntematon *maahin ja oppia tuntematon kieli.*
'It was an adventure for me, to go to a foreign country and to learn a for eign language.'

As this example shows, L2 learning may be an adventure for the learner, but the process of L2 development may also have exciting characteristics when studied from the linguistic point of view: the data may show "wobbles, humps, and sudden jumps", as van Dijk and van Geert (2007) describe it in their article about variability in L1 acquisition. This study suggests that these patterns of variability are important features of a developing L2, and that studying variability can shed new light on L2

learning. It also suggests that not only L2 learners but also L2 instructors should be adventurous: instruction should co-adapt to the changes in learners' language. Sensitivity in teaching an L2 is particularly needed because the instruction should be able to react to the learners' communicative needs and focus on those aspects that are on the move.

TIIVISTELMÄ (Finnish summary)

Tutkimuksen teoreettiset lähtökohdat

Kun kielellä ilmaistaan merkityksiä, täytyy kielenkäyttäjillä olla yhteinen ymmärrys siitä, millaisella kielen muodolla ilmaistaan mitäkin merkitystä. Esimerkiksi suomen kielen käyttäjillä on yhteinen ymmärrys siitä, että sanalla *aurinko* (muoto) viitataan aurinkokuntamme keskellä olevaan tähteen (merkitys). Kielenoppijat oppivat muodostamaan yhteyksiä muotojen ja merkitysten välillä ja käyttämään näitä muodon ja merkityksen yhteenliittymiä eli konstruktioita odotuksenmukaisella tavalla toimiessaan kohdekielisessä ympäristössä. (ks. esim. Goldberg 2006; Langacker 1999; Tomasello 2000.) Alkeistason kielenoppijat eivät välttämättä tiedä, millaiset konstruktiot ovat kohdekielessä vakiintuneita, ja tämän vuoksi toisen kielen oppijat käyttävät joskus ilmauksia, joiden avulla haluttu merkitys välittyy, mutta joiden muoto on epäkonventionaalinen. Tämä tutkimus keskittyy tällaisiin suomi toisena kielenä eli S2 -oppijoiden ilmauksiin. Tavoitteena on tutkia, millaisia konstruktioita neljä korkeakoulutettua suomen kielen oppijaa käyttää ilmaisemaan tiettyjä merkityksiä ja miten nämä konstruktiot kehittyvät yhdeksän kuukauden aikana. Tässä tutkimuksessa kielenoppimisen analyysi aloitetaan siis oppijoiden ilmaisemista merkityksistä: aineiston valinnassa on käytetty onomasiologista lähestymistapaa (ks. Grzega 2012; Fernández-Domínguez 2019).

Tämä väitöstutkimus sijoittuu soveltavan kielitieteen alalle ja edustaa suomi toisena kielenä -oppimisen tutkimusta. **Teoreettisena viitekehyksenä on dynaaminen käyttöpohjainen lähestymistapa (dynamic usage-based approach, DUB), jossa yhdistyvät kaksi teoreettista lähestymistapaa - dynaamisten systeemien teoria (DST) ja käyttöpohjaisten kielenoppimisen mallit (Verspoor ja Behrens 2011; Verspoor, Schmid ja Xu 2012; Roehr-Brackin 2015).** Tämän teoreettisen lähestymistavan mukaan kielenoppiminen on dynaaminen prosessi, jossa kielen kehittyminen ei ole lineaarista ja jossa esiintyy monenlaista vaihtelua. Kehityksen dynaamisuus johtuu oppijankielessä monella tasolla tapahtuvasta vuorovaikutuksesta. Dynaamisen käyttöpohjaisen lähestymistavan mukaan oppijankieli koostuu osasysteemeistä (esimerkiksi fonologia, morfologia ja syntaksi tai tietyn merkityksen ilmaisemiseen käytetyt konstruktiot), jotka ovat vuorovaikutuksessa keskenään. Muutos yhdessä osasysteemissä, esimerkiksi uuden äänteen harjoittelu (fonologia), ei tapahdu eristyksissä muista osasysteemeistä, vaan vaikuttaa myös muihin osasysteemeihin, kuten sanojen taivutukseen (morfologia). Kun oppijankieli on vuorovaikutuksessa kohdekielisen ympäristön kanssa, alkavat oppijankielen eri osasysteemit muuttua ja järjestäytyä (self-organization), ja tällainen kompleksinen eri osien järjestäytyminen on usein ennakoimatonta. Dynaamista käyttöpohjaista lähestymistapaa ovat käyttäneet toisen kielen oppimisen tutkimuksessa esimerkiksi Verspoor ja Behrens (2011), Roehr-Brackin (2015), Verspoor, Schmid ja Xu (2012), Koster (2015) sekä Rousse-Malpat (2019).

Tämä väitöskirja keskittyy kolmeen eri aspektiin oppijankielen kehityksessä: osasysteemien vuorovaikutukseen (interaction of subsystems), oppijankielessä

esiintyvään vaihteluun (variability) ja oppijankielen konstruktioiden abstrahoitumiseen eli skemaattisuuden kehittymiseen (development of abstractness/schematization). Osasysteemien vuorovaikutusta ja oppijankielen vaihtelua on tutkittu etenkin DST-suuntautuneessa tutkimuksessa (esim. Caspi 2010; Chan, Verspoor ja Vahtrick 2015; Lowie ja Verspoor 2018; Spoelman ja Verspoor 2010; Tilma 2014; van Dijk, Verspoor ja Lowie 2011; van Geert 2007; Verspoor ja van Dijk 2011), ja abstrahoitumista eli skemaattisuuden kehittymistä puolestaan käyttöpohjaisiin teorioihin nojaavassa tutkimuksessa (esim. Dąbrowska 2001; Dąbrowska & Lieven 2005; Eskildsen 2009, 2012, 2015; Eskildsen & Cadierno 2007; Lieven, Salomo & Tomasello 2009; Tomasello 2000, 2003).

Oppijankielen osasysteemeistä on tutkittu esimerkiksi kompleksisuuden ja tarkkuuden kehittymisen vaikutusta toisiinsa (Spoelman ja Verspoor 2010; Tilma 2014) sekä sanaston ja lauserakenteiden kehittymistä suhteessa toisiinsa (Caspi 2010), sillä DST:aan nojaavissa tutkimuksissa oppijankieli nähdään systeeminä, jossa eri osat eivät kehity erillään toisistaan vaan ovat yhteydessä ja vaikuttavat toisiinsa jatkuvasti. Oppijankielessä esiintyvän vaihtelun tutkimus on puolestaan ollut DST:n keskeisiä tutkimuskohteita, sillä vaihtelun on osoitettu olevan kytköksissä kielenoppimiseen ja mahdollistavan kielen kehittymisen. Korkean vaihtelun määrä kiivaassa oppimisen vaiheessa johtuu siitä, että uutta oppiessaan oppija joutuu kokeilemaan erilaisia ilmaisutapoja ja kielenkäytön strategioita, mikä näkyy esimerkiksi erilaisten konstruktioiden frekvenssien epätasaisuutena tai tarkkuuden ja kompleksisuuden kehityksen epälineaarisuutena. (Ks. esim. Thelen & Smith 1994; Verspoor, Lowie, Chan and Vahtrick 2017; Verspoor, Lowie and van Dijk 2008; Spoelman & Verspoor 2010; Tilma 2014.)

Oppijankielen konstruktioiden abstrahoitumisen on useissa käyttöpohjaisuuteen nojaavissa tutkimuksissa osoitettu tapahtuvan samalla tavalla sekä ensikielen (Dąbrowska 2001; Dąbrowska & Lieven 2005; Lieven, Salomo, & Tomasello 2009; MacWhinney 1975; Tomasello 1992, 2003) että toisen kielen kohdalla (Eskildsen 2009, 2012, 2015, 2018; Mellow 2006, Roehr-Brackin 2014). Näiden tutkimusten mukaan oppijan konstruktiot muuttuvat skemaattisiksi, abstrakteiksi malleiksi (kuten [haluta + verbi]) vähitellen, kun oppija kohtaa ja käyttää ensin leksikaalisesti spesifejä, kiteytyneitä, toistuvia ilmauksia (kuten *haluan matkustaa*). Joissakin tutkimuksissa on kuitenkin osoitettu, että toisen kielen oppijoilla voi olla käytössään jo hyvin varhaisessa vaiheessa malleja, joita he pystyvät varioimaan. Toisen kielen oppiminen ei siis välttämättä alakaan kiteytyneiden ilmausten käytöllä ja skemaattisia konstruktioita voi esiintyä oppijankielessä jo varhain (Roehr-Brackin 2014; Eskildsen 2015; Arndt-Lappe & Baldus 2018).

Tavoitteet ja tutkimuskysymykset

Tämän tutkimuksen tavoitteena on seurata neljän aikuisen alkeistason suomen kielen oppijan kielen kehittymistä pitkittäisesti. Oppijankieltä lähestytään merkityksistä käsin: **tavoitteena on selvittää millaisia kielellisiä keinoja neljä oppijaa käyttävät ilmaisemaan 1) arvioita (jokin asia on hyvä/huono tai toivottava/ei-toivottava) ja 2) eksistentiaalisuutta (esim. *Suomessa on paljon järviä*) ja miten nämä ilmaisut**

kehittyvät yhdeksän kuukauden aikana. Nämä kaksi merkitystä valikoituivat tutkimuskohteeksi, sillä molemmat ovat hyvin perustavanlaatuisia ilmaisutarpeita: meillä on taipumus arvioida näkemiämme ja kokemiamme asioita sekä ilmaista jonkin asian olemassaoloa. Nämä kaksi merkitystä tarjoavat myös hedelmällisen lähtökohdan oppijankielen konstruktioiden tutkimiselle onomasiologista näkökulmaa hyödyntäen, sillä näiden merkitysten ilmaisemiseen käytetään suomen kielessä erilaisia konstruktiorepertoaareja. Arvioita voi ilmaista hyvin monentyyppisillä tavoilla, esimerkiksi käyttämällä arvioivaa verbiä (*tykätä*), adjektiivia (*hyvä*), adverbia (*huonosti*) tai substantiivia (*tuska*). Eksistentiaalisuutta puolestaan ilmaistaan suomen kielessä yhdellä vakiintuneella konstruktiolla eli nk. eksistentiaalilauseella (VISK § 893–894).

Tämä tutkimus keskittyy kolmeen aspektiin kehittyvässä oppijankielessä: 1) osasysteemien vuorovaikutukseen, 2) vaihteluun ja 3) skemaattisuuteen, ja se koostuu neljästä osatutkimuksesta, joiden tulokset on raportoitu neljässä tutkimusartikkelissa sekä niitä taustoittavasta ja tiivistävästä yhteenveto-osasta. Tutkimusta ohjaavat seuraavat tutkimuskysymykset:

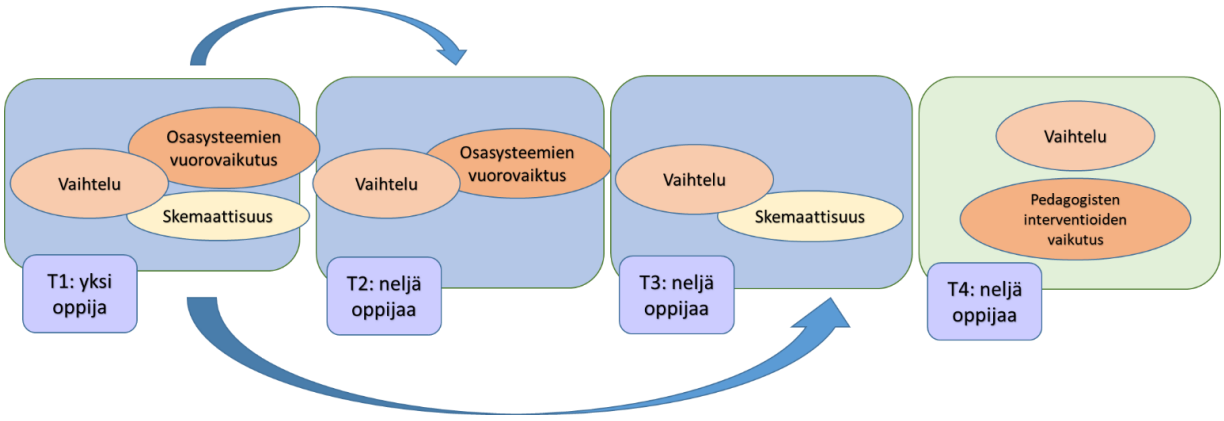
1) Millaisessa vuorovaikutuksessa oppijoiden tietyn merkityksen ilmaisemiseen käyttämät kielelliset keinot (osasysteemit) ovat keskenään?

2) Millaista vaihtelua eri oppijoilla esiintyy kielen osasysteemeissä ja erilaisissa konstruktiossa kehityksen eri vaiheissa?

3) Millä tavoin oppijankielen konstruktioiden skemaattisuus kehittyy?

4) Millainen vaikutus pedagogisilla interventioilla on oppijankielen kehitykseen?

Ensimmäisessä osatutkimuksessa keskitytään yhden oppijan arvioinnin ilmauksiin sekä niissä esiintyvään vuorovaikutukseen ja vaihteluun (tutkimuskysymykset 1 ja 2). Ensimmäisen osatutkimuksen tuloksia on käytetty toisen osatutkimuksen hypoteesien pohjana; siinä tutkitaan, esiintyykö kolmella muulla oppijalla samanlaista vuorovaikutusta ja vaihtelua arvioinnin ilmauksissa (tutkimuskysymykset 1 ja 2). Kolmas osatutkimus keskittyy oppijoiden *haluta*- ja *tykätä* -konstruktioiden skemaattisuuden kehitykseen (tutkimuskysymys 3). Vaihtelun käsite on tässä tutkimuksessa keskeinen skemaattisuuden operationalisoinnin näkökulmasta. Myös tämän tutkimuksen hypoteesit luotiin ensimmäisen osatutkimuksen pohjalta. Neljäs osatutkimus keskittyy osallistujien tapoihin ilmaista eksistentiaalisuutta ja näissä ilmauksissa esiintyvään vaihteluun (tutkimuskysymys 2) sekä siihen, millaista vuorovaikutusta osallistujien yksilöllisten oppimispolkujen ja opetuksen välillä on (tutkimuskysymys 4). Osatutkimusten painotuksia, keskeisiä käsitteitä sekä tutkimusprosessin kulkua havainnollistaa alla oleva kuva. Siniset laatikot kuvaavat osatutkimuksia, jotka keskittyvät arvioinnin ilmauksiin ja vihreä laatikko kuvaa tutkimusta, joka keskittyy eksistentiaalisuuden ilmaisemiseen.



Aineisto ja menetelmät

Tutkimuksen aineisto on kerätty neljältä yliopisto-opiskelijalta. Lena, Alvaro, Jungo ja Khadiza (oppijoiden itsensä valitsemat peitenimet) opiskelivat aineistonkeruun aikana samassa yliopistossa Suomessa joko vaihto-opiskeluohjelmassa tai kansainvälisessä maisteriohjelmassa. Heillä on eri ensikielet (saksa, espanja, kiina ja bangla) ja he kaikki osasivat myös muita kieliä tutkimuksen alkaessa. Aineistonkeruun aikana osallistujat opiskelivat suomea samoilla suomen kielen kursseilla. Nämä kolme peräkkäistä kurssia olivat eurooppalaisen taitotasoluokituksen tasoilla A1, A2 ja B1. Kahdella ensimmäisellä kurssilla (tutkimuksen viisi ensimmäistä kuukautta) olin itse osallistujien opettaja, ja kolmannen kurssin opetti kollega, jolloin olin seuraamassa opetusta.

Aineisto on kerätty viikoittain yhdeksän kuukauden aikana. Kirjoitettu ja puhuttu aineisto on kerätty vuoroviikoin. Jokaiselta osallistujalta on 28–35 kielinäytettä. Kirjoitetut tekstit on kirjoitettu valvotusti, eivätkä osallistujat saaneet käyttää mitään tukimateriaalia, kuten sanakirjaa, apuna kirjoittamisessa. Puhuttu aineisto koostuu sekä monologeista että dialogeista, joissa puhekumppanina on usein toinen S2-oppija mutta joskus myös ensikielinen suomen kielen puhuja. Kielinäytteet ovat vapaata tuotosta: osallistujia on pyydetty puhumaan tai kirjoittamaan vapaasti jostain tietystä aiheesta.

Aineiston valinnassa on käytetty onomasiologista lähestymistapaa (ks. Grzega 2012; Fernández-Domínguez 2019). Tässä lähestymistavassa analyysiin valitaan kaikki ne kielelliset ilmaukset, joilla ilmaistaan haluttua merkitystä - tässä tutkimuksessa arvioita ja eksistentiaalisuutta. Aineiston valinnan jälkeen arvioinnin ilmaukset jaettiin kategorioihin sen mukaan, mikä on ilmauksen arvioiva elementti. Aineiston arvioinnin ilmauksista nousi kaksi pääluokkaa: verbikonstruktiot, joissa arvioiva elementti on verbi (***tykkään*** *Suomesta*) sekä adjektiivikonstruktiot, joissa arvioiva elementti on adjektiivi (*Suomi on* ***hyvä*** *maa*). Eksistentiaalikonstruktiot jaettiin myös kahteen luokkaan: konventionaaliset eksistentiaalikonstruktiot, kuten *Suomessa on paljon järviä* sekä muut, kohdekielen normeihin nähden epäkonventionaaliset konstruktiot, kuten **Se on kolme opiskelijaa samassa huoneessa* tai **Jyväskylä on kaupunki paljon siltan kanssa.*

Osallistujien kielenkehitystä on analysoitu useilla eri menetelmillä. Erilaisten kielellisten keinojen välistä vuorovaikutusta (tutkimuskysymys 1) analysoitiin tasoittamalla konstruktioiden frekvenssejä (data smoothing) (ks. Gunst & Mason 1980). Tämä analyysi tehtiin arvioinnin ilmauksille, ja tavoitteena oli tutkia, millaisessa vuorovaikutuksessa verbi- ja adjektiivikonstruktiot ovat keskenään. **Frekvenssien tasoittaminen** auttaa näkemään aineistossa esiintyviä trendejä, sillä tasoitetuista frekvensseistä on mahdollista arvioida, miten kaksi muuttujaa (esimerkiksi verbi- ja adjektiivikonstruktiot) kehittyvät suhteessa toisiinsa. Frekvenssien tasoittamisen avulla voidaan tutkia, onko vuorovaikutus 1) kilpailevaa, jolloin yhden muuttujan frekvenssi laskee toisen frekvenssin noustessa, 2) toisiaan tukevaa, jolloin molempien muuttujien frekvenssi joko nousee tai laskee vai 3) ehdollista, jolloin toisen frekvenssin täytyy saavuttaa tietty taso ennen kuin toisen frekvenssi nousee (Verspoor & van Dijk 2011: 86).

Oppijankielessä esiintyvää vaihtelua (tutkimuskysymys 2) tutkittiin kolmella eri menetelmällä. Oppijankielen osasysteemeissä (toisen tutkimuskysymyksen ensimmäinen osa) eli verbi- ja adjektiivikonstruktioissa esiintyvää vaihtelua analysoitiin kahdella menetelmällä: **liukuvan minimi–maksimi -kuvaajan** ja **varianssin** avulla. Liukuvan minimi–maksimi -kuvaajan avulla saadaan näkyviin, millaisella skaalalla tietyn muuttujan frekvenssit ovat ja miten tämä skaala muuttuu ajan kuluessa. Kuvaaja näyttää muuttujan minimi- ja maksimiarvot tietyn ikkunan sisällä ja mitä suurempi minimi- ja maksimiarvojen välinen erotus kuvaajassa on, sitä enemmän muuttujan frekvenssissä esiintyy vaihtelua. (van Geert ja van Dijk 2002: 353–354.) Varianssin avulla vaihtelulle voidaan laskea numeerinen arvo. Varianssi kertoo, kuinka paljon muuttujan arvot keskimäärin poikkeavat keskiarvosta. (van Geert ja van Dijk 2002: 361.)

Osallistujien eksistentiaalikonstruktioissa esiintyvän vaihtelun (toisen tutkimuskysymyksen jälkimmäinen osa) analyysissa on hyödynnetty onomasiologista näkökulmaa (ks. Grzega 2012; Fernández-Domínguez 2019). Osallistujien eksistentiaalisuuden ilmaisemiseen käytettyjen **konstruktioiden repertoaareja** on verrattu keskenään sekä kohdekieliseen tapaan ilmaista eksistentiaalisuutta. Jos osallistuja käytti useita erilaisia - konventionaalisia ja epäkonventionaalisia - konstruktioita ilmaisemaan eksistentiaalisuutta, hänen kielessään katsottiin esiintyvän paljon vaihtelua.

Myös kolmanteen tutkimuskysymykseen vastattaessa käytettiin hyväksi vaihtelun käsitettä, sillä **konstruktioiden skemaattisuuden astetta arvioitiin konstruktioiden sisällä esiintyvän vaihtelun näkökulmasta**. Koska tavoitteena oli tutkia, miten oppijoiden *haluta*- ja *tykätä* -konstruktioiden skemaattisuuden aste kehittyy pitkittäisesti, jokaisen osallistujan käyttämät konstruktiot jaettiin konstruktioiden käyttöön aineistonkeruun alku- ja loppupuolella. Konstruktioissa esiintyvää vaihtelua tutkittiin laskemalla *haluta*- ja *tykätä* -verbien eri muodot sekä erilaisten täydennysten (verbi-, substantiivi- ja sivulausetäydennys) esiintymät. Näiden lukujen avulla osallistujien konstruktiot voitiin asettaa jatkumolle vähän vaihtelevista, leksikaalisesti kiteytyneistä konstruktioista vaihteleviin, abstrakteihin ja skemaattisiin konstruktioihin. Kiteytyneissä konstruktioissa esiintyy vähän vaihtelua, koska oppija käyttää toistuvasti samaa muotoa *haluta*- tai *tykätä* -verbistä

eikä täydennyksissä esiinny vaihtelua. Skemaattisissa konstruktioissa oppija käyttää sekä pääverbistä että sen täydennyksistä useita eri muotoja.

Pedagogisten interventioiden vaikutusta osallistujien kielenkehitykseen (tutkimuskysymys 4) tutkittiin eksistentiaalikonstruktioiden osalta. Interventioiden vaikutusten tutkimisen mahdollisti se, että osallistujien käymillä suomen kielen kursseilla oli kaksi selkeää eksistentiaalikonstruktioon keskittyvää pedagogisten interventioiden jaksoa. Näiden **interventiojaksojen ajoitusta verrattiin osallistujien eksistentiaalikonstruktioiden käytössä ja tarkkuudessa tapahtuviin muutoksiin** käyttäen hyväksi pylväsdiagrammeja. Tällaisen yksinkertaisen visualisointimenetelmän avulla saatiin kuva siitä, miten oppijoiden eksistentiaalikonstruktioiden repertoaari ja tarkkuus muuttuvat ajan kuluessa, ja miten nämä muutokset suhteutuvat pedagogisten interventioiden ajoitukseen.

Tutkimuksen päätulokset

Tämän tutkimuksen ensimmäinen päätulos on, että kun kielenoppija ilmaisee jotakin tiettyä merkitystä, voivat erilaiset merkityksen ilmaisemiseen käytetyt kielelliset keinot olla kilpailevassa vuorovaikutuksessa keskenään (tutkimuskysymys 1). Tällainen kilpaileva vuorovaikutus raportoitiin osatutkimuksissa 1 ja 2, joissa tutkittiin arvioinnin ilmauksia. Kaikki osallistujat käyttivät lähes yksinomaan verbi- ja adjektiivikonstruktioita arvioinnin ilmaisemiseen, ja näiden konstruktioiden käytössä oli kaikilla osallistujilla havaittavissa selkeät vaiheet. Verbikonstruktioita käytettiin aineistonkeruun alkuvaiheessa, ja tällöin adjektiivikonstruktioiden käyttö oli hyvin rajoittunutta. Kun adjektiivikonstruktioita alettiin myöhemmin käyttää, verbien käyttö väheni ja yksipuolistui. Yhden konstruktiotyypin käyttö ja kehitys tapahtuivat siis toisen kustannuksella, eli verbi- ja adjektiivikonstruktiot olivat kilpailevassa vuorovaikutussuhteessa keskenään. Tämä tulos on linjassa aikaisemman DST-tutkimuksen kanssa: useissa tutkimuksissa on löydetty kilpailevia elementtejä oppijankielessä (esim. Spoelman ja Verspoor 2010; Verspoor, Lowie ja van Dijk 2008).

Toinen päätulos oppijankielessä esiintyvästä vaihtelusta (tutkimuskysymys 2) on myös linjassa dynaamisten systeemien teorian oletusten kanssa (ks. esim. Thelen ja Smith 1994; van Dijk, Verspoor ja Lowie 2011). **Tulokset osoittavat, että oppijankielessä esiintyvän vaihtelun runsaus on yhteydessä kehitykseen.** Arvioinnin ilmausten kohdalla tulokset osoittavat, että siinä osasysteemissä, johon oppija näyttää keskittyvän (eli se konstruktiotyyppi, jonka frekvenssit ovat korkeat), on enemmän vaihtelua. Eksistentiaalisuuden ilmaisemiseen käytettyjen konstruktioiden kohdalla tulokset osoittavat, että osalla osallistujista eksistentiaalisuuden ilmaisemiseen käytetty konstruktiorepertoaari on suurempi kuin toisilla osallistujilla, eli heidän kielessään esiintyy enemmän vaihtelua. Nämä oppijat kokeilivat useita erilaisia epäkonventionaalisia tapoja ilmaista eksistentiaalisuutta (kuten **Se on kolme opiskelijaa samassa huoneessa*), ja he löysivät konventionaalisen tavan ilmaista eksistentiaalisuutta jo ennen kuin se tuotiin opetuksessa esille. Ne oppijat, jotka eivät kokeilleet aktiivisesti, miten eksistentiaalisuutta voi suomeksi ilmaista, alkoivat puolestaan ilmaista tätä

merkitystä frekventimmin vasta, kun eksistentiaalikonstruktio oli esitelty luokassa opettajajohtoisesti.

Kolmas päätulos on se, että toisen kielen oppijoiden konstruktiot voivat olla oppimisen alkuvaiheessa joko kiteytyneitä eli leksikaalisesti spesifejä ilmaisuja tai abstraktimpia skemaattisia malleja. Osa *haluta*- ja *tykätä* -konstruktioista kehittyi leksikaalisesti spesifeistä, kiteytyneistä fraaseista kohti varioivampia ilmauksia aivan kuten aiemman käyttöpohjaisuuteen tukeutuvan kielenoppimisen tutkimuksen valossa voidaan olettaa (esim. Dąbrowska 2001; Dąbrowska & Lieven 2005; Eskildsen 2009, 2012, 2018; Mellow 2006; Roehr-Brackin 2014; Tomasello 2003). Osalla osallistujista *haluta*- ja *tykätä* -konstruktiot olivat kuitenkin melko vaihtelevia ja näyttivät siis pohjautuvan abstraktiin malliin jo hyvin varhaisessa vaiheessa. Samankaltaisia tutkimustuloksia on saatu vasta muutamassa aiemmassa pitkittäisessä tutkimuksessa (Eskildsen 2015; Roehr-Brackin 2014), joten tulos on merkittävä käyttöpohjaisuuteen nojaavan toisen kielen oppimisen kentällä.

Neljäs osatutkimus osoittaa, että opetus voi auttaa oppijoita löytämään konventionaalisen konstruktion ilmaista tiettyä merkitystä (esim. *Suomessa on paljon järviä* vs. **Se on paljon järviä Suomessa*), mutta muotoihin keskittyminen ei välttämättä vaikuta merkittävästi oppijankielen tarkkuuteen. Kaikilla osallistujilla konventionaalisen eksistentiaalikonstruktion käyttö lisääntyi pedagogisten interventioiden jälkeen ja osalla epäkonventionaalisten konstruktioiden käyttö väheni. Eksistentiaalikonstruktion subjektin sijan tarkkuuteen opetuksella ei kuitenkaan ollut suurta vaikutusta: kohdekielen vastaisia muotoja tuotettiin myös pedagogisten interventioiden jälkeen.

Pohdinta ja loppusanat

Tässä tutkimuksessa käytetty dynaaminen käyttöpohjainen lähestymistapa (DUB) on vielä varsin vähän käytetty viitekehys toisen kielen oppimisen tutkimuksessa (ks. kuitenkin Verspoor ja Behrens 2011; Verspoor, Schmid ja Xu 2012; Roehr-Brackin 2015) ja suomi toisena kielenä -oppimisen tutkimuksessa sitä ei ole sovellettu aikaisemmin lainkaan. Tämä tutkimus vahvistaa sen, että kahden eri teoreettisen lähestymistavan (dynaamisten systeemien teoria (DST) ja käyttöpohjaiset kielenoppimisen mallit) yhdistelmänä DUB on hedelmällinen viitekehys toisen kielen oppimisen tutkimuksessa. Tämän tutkimuksen tulokset vahvistavat näiden kahden eri viitekehyksen näkemystä kielenoppimisesta dynaamisena prosessina. Oppijankielen kehittyminen ei aina ole suoraviivaista, sillä kieli on jatkuvasti vuorovaikutuksessa kohdekielisen ympäristön kanssa ja kielen eri osasysteemit ovat yhteydessä toisiinsa ja muutos yhdessä osassa voi vaikuttaa koko systeemiin. Tämä tutkimus osoittaa, miten oppijankielen konstruktiot kehkeytyvät kielenkäyttötilanteissa ja vahvistaa näin DUB:n olettamuksia siitä, että kielenoppimisprosessit ovat yksilöllisiä.

Tässä tutkimuksessa **DST:n käyttö yhdessä onomasiologisen lähestymistavan kanssa osoittautui hedelmälliseksi**, sillä DST:ssä on usein tutkittu oppijankielen kehitystä rakenteista käsin, mutta tämä tutkimus löysi kehittyvässä oppijankielessä kilpailevia elementtejä sekä vaihtelua myös silloin, kun analyysin lähtökohtana ovat

oppijoiden ilmaisemat merkitykset. Verbi- ja adjektiivikonstruktioiden välillä esiintyvä kilpaileva vuorovaikutussuhde sekä lisääntyneen vaihtelun yhteys kehitykseen ovat linjassa kahden aikaisemman DST-suuntautuneen S2-tutkimuksen tulosten kanssa. Sekä Spoelman ja Verspoor (2010) että Tilma (2014) ovat raportoineet sekä kilpailua että lisääntynyttä vaihtelua oppijankielessä, kun tutkimuksen kohteena on ollut S2-oppijoiden kielen kompleksisuuden ja tarkkuuden kehitys. Voidaankin siis todeta, että **kilpailu ja kielessä esiintyvä vaihtelu ovat yleisiä kehittyvän toisen kielen piirteitä**, sillä niitä on pystytty tunnistamaan, kun kieltä on tarkasteltu hyvin erilaisista lähtökohdista (merkitys, kuten tässä tutkimuksessa vs. rakenne, kuten Spoelmanin ja Verspoorin (2010) ja Tilman (2014) tutkimuksissa). Myös muiden kuin suomen kielen osalta onomasiologisen lähestymistavan yhdistäminen pitkittäiseen DST-tutkimukseen olisi nähdäkseni hedelmällistä, sillä eri kielissä erilaisten merkitysten ilmaisemiseen käytetään hyvin erilaisia konstruktiorepertoaareja.

Dynaamisten systeemien teoriassa oppijankieli nähdään kompleksisena dynaamisena systeeminä. Tämän väitöskirjan **tulokset tukevat näkemystä oppijankielestä kompleksisena, dynaamisena systeeminä, jossa eri osasysteemit, kuten tietyn merkityksen ilmaisemiseen käytetyt konstruktiot, ovat yhteydessä toisiinsa. Näin ollen muutos yhdessä osasysteemissä voi vaikuttaa koko systeemiin.** (Ks. esim. Chan, Verspoor, & Vahtrick 2015; Spoelman & Verspoor 2010; Tilma 2014; Verspoor & van Dijk 2011.) Tulokset tukevat myös näkemystä siitä, että **kielessä esiintyvä vaihtelu on välttämätöntä kehitykselle, sillä oppijan täytyy kokeilla erilaisia strategioita, jotta tiettyyn vuorovaikutustilanteeseen parhaiten sopivat kielelliset keinot löytyvät** (ks. esim. Thelen and Smith 1994; Ellis 1994; van Dijk, Verspoor, Lowie 2011; Verspoor, Lowie, Chan ja Vahtrick 2017; Verspoor, Lowie ja van Dijk 2008). Vaihtelun runsaus oppijankielessä on siis tärkeä oppimisen mahdollistaja, mutta myös osoitus meneillään olevasta kehityksestä. Vaihtelun määrän tutkiminen ja arvioiminen oppijankielessä voikin antaa meille tärkeää tietoa oppimisen etenemisestä, ja tätä tietoa voidaan käyttää hyväksi esimerkiksi opetuksen suunnittelussa, sillä pedagogisen intervention ajoitus on mahdollisesti kaikkein tehokkain juuri silloin, kun oppijankielessä esiintyy paljon vaihtelua (Larsen-Freeman ja Cameron 2008; Aalto, Mustonen ja Tukia 2009).

Tässä tutkimuksessa raportoidut oppijankielen konstruktioiden skemaattisuuden kehityslinjat tukevat osittain aikaisempien tutkimusten tuloksia siitä, että oppijankielen konstruktiot kehittyvät leksikaalisesti spesifeistä, varioimattomista ilmauksista kohti abstrakteja malleja (esim. Eskildsen 2009, 2012, 2018; Mellow, 2006; Roehr-Brackin, 2014). Toisaalta tulokset osoittavat, että myös toisenlainen kehitys on mahdollista, sillä **toisen kielen oppijoiden konstruktiot voivat olla varioivia jo varhaisessa vaiheessa oppimista. Samansuuntaisia tuloksia on vasta melko niukasti** (ks. Roehr-Brackin 2014 ja Eskildsen 2012, 2015), ja siksi aiheesta tarvitaan lisätutkimusta. Keskeistä on tutkia morfologisilta piirteiltään erilaisten kielten omaksumisprosesseja, sillä kohdekielen morfologia voi olla yksi skemaattisuuden kehittymiseen vaikuttava piirre (ks. Steinkrauss 2009). Suomen kielen kaltaisten morfologisesti rikkaiden kielten oppimisesta tutkimusta on vielä varsin vähän, sillä käyttöpohjaisten kielenoppimisen teorioiden hypoteesien

testausta on tehty lähinnä englannin kielen kohdalla (ks. kuitenkin Roehr-Brackinin 2014 saksan kielen oppimimista käsittelevä tutkimus). Tässä väitöskirjassa raportoitu tutkimus tuokin arvokkaita näkökulmia ja havaintoja käyttöpohjaisten kielenoppimisen teorioiden keskeiseen kysymykseen siitä, eteneekö toisen kielen oppiminen leksikaalisesti spesifeistä yksiköistä kohti varioivaa kielenkäyttöä.

Soveltavan kielitieteen tutkijoiden keskuudessa on yleisesti hyväksytty se, ettei tapaustutkimuksista saatuja tuloksia voida yleistää koskemaan suuria joukkoja (ks. viimeaikainen pohdinta yleistettävyydestä kielen oppimisen tutkimuksen tuloksista: Molenaar 2015; Lowie ja Verspoor 2019). Samoin on toistuvasti osoitettu, että oppimisen eteneminen on yksilöllistä (Lowie & Verspoor 2015; Chan, Verspoor & Vahtrick 2015; Lowie & Verspoor 2019). Näyttää kuitenkin siltä, että toisen kielen oppimisessa on joitakin sellaisia piirteitä, joita voidaan yleistää koskemaan suurempaakin oppijajoukkoa. Tämä tutkimus osoittaa - ollen linjassa aikaisemman DST-tutkimuksen kanssa - että oppijankielessä on sekä kilpailevia elementtejä että monenlaista vaihtelua. Lisäksi tämä tutkimus osoittaa, että oppija voi kehittää skemaattisia konstruktioita ainakin kahta hyvin erilaista polkua seuraten. Myös opetuksen vaikutus on yksilöllinen, mutta tämän tutkimuksen tulokset osoittavat, että opetus voi auttaa oppijoita löytämään kohdekielisen tavan ilmaista tiettyä merkitystä, vaikka kielen tarkkuuden kehitykseen opetuksella ei välttämättä voida vahvasti vaikuttaa.

Tämä väitöstutkimus tutki niitä kielellisiä keinoja, joita neljä alkeistason suomen kielen oppijaa käyttivät ilmaisemaan arvioita ja eksistentiaalisuutta. Tulokset osoittavat, että kehittyvän toisen kielen merkitysten ilmaisuissa esiintyy paljon vaihtelua. DST:n mukaan tällainen oppijankielen muodoissa ja muotojen frekvensseissä esiintyvä vaihtelu on tärkeää oppimisen kannalta, sillä usein parhaimmat tavat ilmaista tiettyä merkitystä löytyvät yrityksen ja erehdyksen kautta. Tämän tutkimuksen tulokset vahvistavat siis DST:n näkemystä siitä, että kokeilunhaluisuus oppimisessa saattaa olla menestyksen avain kielenoppimisessa. Vaihtelu on vahvuus.

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APPENDICES

APPENDIX 1

GLOSSING.

ACC accusative

ADE adessive (‘at, on’)

ALL allative (‘to’)

COND conditional

ELAT elative (‘out of’)

GEN genitive (possession)

ILL illative (‘into’)

INE inessive (‘in’)

INF infinitive

NEG negation

PAR partitive (partitiveness)

PL plural

PST past tense

PPC past participle

Q interrogative

SG singular

1 1st person ending

2 2nd person ending

3 3rd person ending

3.INF 3rd infinitive (ma infinitive)

APPENDIX 2

Tasks used in data collection.

Week	Type of data	Task
1	w	Write about yourself
2	s, dialogue	Interview your partner and tell about yourself
3	w	Introduction to your blog (write about yourself)
4	s, dialogue	Talk with your partner. Pictures of various kinds used as inspiration.
5	w	Write about yourself
6	s, monologue	Look at the cartoon strip and talk about Martti's day.
7	w	Write a story of a person in a picture.
8	s, monologue	Describe yourself to your partner.
9	w	What are you going to do this week?
10	s, dialogue	Talk about Jyväskylä with your partner.
11	w	Write a text about Finland.
12	s, monologue	Look at the cartoon strip and talk about Martti's day.
13	w	What did you do last weekend?
14	s, dialogue	Which one do you prefer …? Various pairs: car or train. holiday in Lapland or in a warm place. laptop or iPad.
15	w	What did you do whenever (last week. last weekend. last summer)?
16	s, group conversation	Which one do you prefer …?
17	w	Write an email to your teacher.
18	s, dialogue	How was your autumn term in Finland?
19	w	Write an email to your teacher.
20	s, dialogue	Tell us about people in the pictures.
21	w	What did you do in the Christmas holiday?
22	s, dialogue	How was your holiday?
23	w	Write an invitation to your birthday party.
24	s, monologue	What is important for you in your life?
25	w	You wake up because you hear some awful noise. What do you do?
26	s, dialogue	Reaction exercises. Questions Lena was asked: Could I borrow your bike? Do you have a skiing holiday?
27	w	What do you do if you are tired or depressed?
28	s, monologue	Look at the cartoon strip and talk about Martti's day.
29	w	What is different between Finland and your home country?
30	s, dialogue	Talk about your 'a trip in Finland' project

31	w	How did project work during the course go?
32	s, group conversation	Talk about your home city.
33	w	What did you do in the Easter holiday?
34	s, dialogue	What would you do if you had 5000 euros?
35	w	What are you going to do next summer?
36	s, dialogue	Reflect on your Finnish learning

w = written text, s = spoken text

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From conceptualization to constructions in Finnish as an L2: a case study

Sirkku Lesonen, Minna Suni, Rasmus Steinkrauss, Marjolijn Verspoor

1 Introduction

The current study traces one learner of Finnish over the course of one academic year to see how her L2 develops in terms of the constructions she uses to express a form of evaluation, i.e. whether she likes something or not, or whether she finds something good or not or desirable or undesirable. We will take an onomasiological approach to identify the formal verbalizations the learner uses to express the given extralinguistic concept (Grzega 2012: 271), in this case, the concept of evaluation. This is in line with the assumption that communication and the expression of meaning are central to linguistic development (e.g. Langacker 2009: 628). We assume the learner is likely to rely on simple constructions (Martin, Mustonen, Reiman & Seilonen 2010) or fixed formulas (Eskildsen 2008; Tomasello 2003) at first, but to diversify her production and use more flexible and sophisticated constructions later on (Martin et al. 2010). These general expectations are rather obvious, but the aim of this paper is to explore such development in detail.

Taking a dynamic usage-based perspective (Langacker 2009; Verspoor & Behrens 2011; Verspoor, Schmid & Xu 2012), we expect a bottom-up process of development proceeding piecemeal from fixed formulas to more abstract constructions (e.g. Ellis 2002; Tomasello 2003), and we expect this development to be non-linear in that different constructions will show different kinds of developmental trajectories (van Dijk, Verspoor & Lowie 2011) and different types of interactions between constructions along the way (Verspoor & van Dijk 2011). For example, one construction may be used at the expense of another and show signs of overuse before the second construction develops. After defining the extralinguistic concept of 'positive and negative evaluation' as used in the current paper and how the construct can be operationalized in Finnish, we discuss what we mean by a dynamic usage-based approach and trajectories the literature leads us to expect. Then we will describe in detail how an absolute beginner developed her ways of expressing evaluation in Finnish as L2.

2 The language of evaluation in Finnish

When we first examined our data to see which extralinguistic concepts were used frequently enough to be analyzed in detail, we found that our learner expressed what she liked or did not like and found something good or bad or desirable or undesirable quite frequently. The extralinguistic concept of evaluation is probably a very basic fundamental aspect of human cognition and may be expected to emerge soon in a beginner's language even though his/her linguistic resources may be quite limited. J.R. Martin and P.R.R. White (2005: 45) point out that attitude can be expressed linguistically in various grammatical structures. However, the most likely ones in most languages are either with a lexical verb (e.g *like, love, hate)* or in an adjective construction (something is *good, bad, desirable, undesirable*). Usually, these constructions are mutually exclusive, so the evaluation is expressed by either the lexical verb or the adjective construction.

In Finnish, too, evaluation can be expressed by lexical verbs. Verbs of emotion (including those expressing evaluations), which have been studied by Mari Siiroinen (2001), can be grouped into four semantic classes: inchoative, activity, stative, and causative verbs. Our participant used mainly stative and

causative evaluative verbs. Stative emotive verbs express an emotional state in which the experiencer controls the emotion (Example 1) and the emotional state is rather stable. In such constructions, the experiencer is the grammatical subject of the verb.

(1) *Merakasta-mme sinu-a.*
We love-1PL you-PAR
'We love you.'

Causative verbs, in contrast, express an emotional state in which the experiencer does not control the emotion (Example 2). In such constructions, the experiencer is the syntactical object of the phrase.

(2) *Minu-a ärsyttä-ä.*
I-PAR annoy-3SG
'I'm annoyed.'

Finnish being an agglutinative language (Dahl 2008: 545), these verbs, just like other verbs, show a rich inflection, for both tense (present, past, perfect, and pluperfect) (Virtuaalinen iso suomen kielioppi (Comprehensive Finnish Grammar Online) [VISK] § 1523) and mood (four moods, VISK § 111)). Also, there is congruence between verb and subject (see Examples 3 and 7) (VISK § 1267). In addition, the complements of the verbs take case endings to express government (VISK §1225). Government is relevant because many verbs expressing evaluation govern one of the 15 cases in Finnish (VISK § 81). For example, the nominal complement of the verb *tykätä* 'like$_1$' is always in the elative case (see Examples 3–7). *Pitää* 'like$_2$' requires the elative case, too. On the other hand, *rakastaa* 'love' and *vihata* 'hate' require the object to be in the partitive case.

Examples 3–6 illustrate the four tenses of the Finnish language using the verb *tykätä* 'to like' in the first person singular with the complement in the elative case, and Example 7 shows a second person singular use of the verb.

(3) *Minä tykkää-n opiskelu-sta.*
I like-1SG studying-ELA
'I like studying.'

(4) *Minä tykkä-si-n opiskelu-sta.*
I like-PST-1SG studying-ELA
'I liked studying.'

(5) *Minä ole-n tykän-nyt opiskelu-sta.*
I be-1SG like-PPC studying-ELA
'I have liked studying.'

(6) *Minä ol-i-n tykän-nyt opiskelu-sta.*
I be-PST-1SG like-PPC studying-ELA
'I had liked studying.'

(7) *Sinä tykkää-t opiskelu-sta.*
You like-2SG studying-ELA
'You like studying.'

Another typical means of expressing evaluation in Finnish is by using an adjective construction, often in a comment clause (VISK § 1212). Adjectives are used to characterize and describe things and events (VISK § 603). A comment clause is a declarative sentence in which the speaker expresses his or her evaluation of, or attitude towards something. The typical comment clause is a copula clause (VISK §

1212) e.g. *Hän on tosi kiva* 'He is really nice'. However, other sentence types can also be evaluative: the crucial point is that there is an evaluative or affective element (normally an adjective) in the phrase (VISK § 1212).

In our study, adjectives expressing evaluation were found in several sentence types and used both predicatively and attributively. A predicative use was attested in a copula sentence (*Se oli hyvä* 'It was good'), a type of comment clause (VISK § 1212), while attributive uses were found in transitive sentences (*Söimme hyvää ruokaa* 'We ate good food'), possessive sentences (*Minulla ei *oli *hyvää *ideoja* 'I didn't have any good ideas') and in existential sentences (*Ruotsissa on hyvä *maaster* 'There is a good masters program in Sweden') (see VISK § 891 for sentence types). A comparative, expressed by the suffix *-mpi* (Karlsson 2015) like in the phrase *kotona on *kivampi* 'It's nicer at home' was found as well. Regarding adverbs, only one adverb was found to express evaluation, *hyvin* 'well'.

Finally, all expressions of evaluation may occur in different syntactic environments (in simple, compound, complex and compound-complex sentences as defined by Verspoor & Sauter 2000), and their form may depend on register. Prime examples are the short colloquial forms of personal pronouns, which differ from the longer standard language forms (*minä* vs. *mä* 'I'; *minun* vs. *mun* 'my'; *minulla on* vs. *mulla on* 'I have'). There are also lexical differences, e.g., *tykätä* and *pitää* both translate as 'like', but *tykätä* occurs more in spoken, colloquial language and *pitää* is strongly preferred in the standard language (Kielitoimiston sanakirja: New Dictionary of Modern Finnish).

In the next section, we will discuss the sort of development that may be expected from a usage-based perspective when learning linguistic constructions such as those expressing evaluation in a second language (L2).

3 L2 development from a usage-based perspective

In usage-based approaches, linguistic knowledge is described as a structured collection of symbolic units (Langacker 1987: 57). The term *construction* is used to refer to these units (form-meaning pairings), which vary in size (from single morphemes to longer expressions and sentences) and level of abstraction (from lexically specific units such as words or fixed phrases to more abstract structures like syntactic patterns) (Langacker 1987, 1999). Adele Goldberg (2006: 3) defines constructions as "conventionalized pairings of form and function". In the current study, we adopt this definition but extend the meaning of the term *construction* to include the emergent form-meaning mappings used by the participant that might not (yet) seem conventional from the point of view of proficient speakers of Finnish.

In usage-based linguistics, language is seen as part of general human cognition, and it is stressed that its constitutive function is to convey meanings in social situations (Langacker 2009: 628). Accordingly, language learning is seen as learning constructions in social interaction (e.g. Tomasello 2003; Ellis & Cadierno 2009: 112). Both first and second language constructions are assumed to emerge from natural language use, and language development is therefore driven by usage-events (L1: Lieven, Salomo & Tomasello 2009; Tomasello 2003; L2: Eskildsen 2008, 2012). According to usage-based linguistic assumptions, the learning of constructions starts from a few exemplars. The learner acquires the first constructions as fixed formulas tied to specific usage events. These first constructions show very little variation in meaning and form and are dependent on the personal linguistic history of the learner. It is in this sense that language learning is referred to as usage-based – the constructions are rooted in the learner's specific usage events.

The first fixed constructions then serve as the starting point to gradually develop more schematic, abstract constructions. When a learner encounters the same and other, similar linguistic expressions again in new usage events, slight differences between the expressions will lead to the learner developing knowledge about the functions of different parts of the construction and which parts of the construction might be varied. This process is guided by the socio-interactional objectives of the learner: the slots into which new lexical material can be inserted become open only if there is a reason to break down the

construction (see needs-only analysis: Wray 2007). As the learner is gradually exposed to a growing number of various instantiations of the same linguistic pattern, the initially fixed construction develops into an increasingly, and possibly entirely, generalizable schema containing only little, if any, specific lexical material. This is why in usage-based approaches, language learning is generally viewed as a bottom-up process that is ultimately grounded in specific linguistic exemplars. Frequency plays a crucial role in this development: the high token frequency of a specific construction typically leads to its being stored holistically as a fixed expression, while a high type frequency, i.e. with many different instantiations of a linguistic pattern, leads instead to schematization. Importantly, the initially fixed, lexically specific formulas will not necessarily be replaced by (partly) schematic constructions but may coexist with these in a learner's linguistic inventory (Langacker 2009).

This view of a bottom-up, exemplar-based process of linguistic development grounded in lexically specific constructions was first formulated for first language development (Peters 1983; Tomasello 2003) and it has been attested in many empirical studies (e.g. Dąbrowska & Lieven 2005; Lieven et al. 2009). It has also been proposed as a "default" guideline (Ellis 2002: 170) for researching second language development and has been confirmed in some L2 studies. In a longitudinal case study, J. Dean Mellow (2006) showed that Ana, a 12-year-old L2 English learner, acquired embedded clauses in an exemplar-based process. Ana first used the clauses with specific lexical items and later expanded the usage to other lexical items as well. In another longitudinal study, Søren Eskildsen and Teresa Cadierno (2007) found that the *do*-negation of an adult Mexican L2 English learner developed in an item-based fashion, since *do*-negation was initially used only in the form *I don't know*. Later the construction became more varied as other verbs and pronouns were used with that pattern. Similarly, Eskildsen (2008) reported on an adult Spanish-speaking L2 English learner whose multi-word expression *I can write* was a basis for the auxiliary use of *can*. Eskildsen's (2012) longitudinal case study on the development of L2 negation supports the exemplar-based learning route as well. Valerio, an adult L2 English learner, initially relied strongly on the multiword expression *I don't know* when using negation constructions in a target-like way.

Several L2 developmental studies have thus shown the role of item-based expressions in learning, in which learners schematize constructions only after they have mastered specific ones first. Ronald Langacker, however, argues that abstract schematic constructions may also be formed even if "no specific lexical sequence is repeated" (2009: 633), and stored as a constructional unit. He illustrates this process with verbs of caused motion: a learner may encounter different expressions with various verbs such as *throw it away, pick it up, put it down, turn it around* and form the schematic pattern [verb object directional] which is immanent in its different instantiating specific expressions (Langacker 2009: 633.) In other words, a schematic construction "can in principle be abstracted from countless instantiating expressions, none of which is necessarily learned individually" (Langacker, 2009: 630).

Langacker's alternative learning trajectory is still based on the encountering of specific expressions in many different usage events, but it departs from the idea that linguistic development can only start with the learning of fixed formulas, which are subsequently broken up. Especially in L2 development, this kind of trajectory may be relevant as the learner is already familiar with schematization in the L1 and may have access to instruction and explicit knowledge about the L2. Precisely this mechanism of learning constructions without starting from lexically specific items has been demonstrated in an empirical L2 study by Karen Roehr-Brackin (2014). She showed that an L2 German learner developed two similar constructions, the German Perfekt of *fahren* and *gehen*, in different ways. The development of *fahren* began with the use of a few item-based constructions and continued with the use of more, and more abstract, constructions. In contrast, the initial use of *gehen* constructions was not item-specific but abstract. Roehr-Brackin reasons that explicit knowledge may have played a role in the development of the *gehen* construction, as the learner also showed more errors and self-corrections when using this construction. Similarly, Eskildsen (2012) found that some of the negation constructions of his two L2 learners of English were not exemplar based, but flexible from the very beginning. In his learners, the more schematic construction was a non-target-like negation pattern that served as a default structure and did not depend on recurring expressions. Eskildsen (2015) also shows in another study of an adult L2

English learner that the initial use of declarative copula questions is more productive than that of interrogative copula questions.

It thus seems that in L2 learning, there might be a departure from the frequently attested developmental trajectory from lexically specific formulas to abstract constructions. Some reasons may be that the L2 learner already has an established L1 and L1 schemas available. For example, Brian MacWhinney argues in his unified model (2004: 21) that the L2 is parasitic on the L1 because so much is transferred. Especially beginner learners tend to rely on L1 constructions when expressing ideas (Cadierno 2008: 259) and may use their knowledge of their L1 when filling in the open slots in L2 constructions (Smiskova-Gustafsson 2013: 128). Another factor for different trajectories than in the L1 is instruction, as it may facilitate the process of registering the differences between L1 and L2 constructions and help to overcome the learner's attentional bias (Ellis & Cadierno 2009: 125). Also explicit knowledge may help the learner to notice certain aspects of language and speed up the process of making analogies and generalizations and hence affect the learning trajectory (Ivaska 2015: 35).

To sum up, usage-based linguistics generally argues for a 'starting big' approach in language acquisition, which begins with the use of fixed expressions, i.e. unanalyzed units. The development then continues with analysis of the fixed forms as the learner breaks phrases down into their smaller components. In breaking the bigger elements into smaller components, the learner analyzes the forms and gets more creative over time as abstract linguistic knowledge develops. This usage-based learning path has been confirmed in both L1 and L2 learning studies. However, in L2 learning the roles of the L1 and instruction have to be taken into account. The question thus arises whether a developmental trajectory that starts with less specific schematic patterns as found in the three usage-based studies mentioned above may be attested in L2 Finnish learning.

4 L2 development from a dynamic usage-based perspective

As in usage-based linguistics, a complex dynamic systems theory perspective assumes that language learning is a bottom-up process in which iteration (the repetition of similar and/or different usage events) drives the learning system. In addition, a complex dynamic system approach holds that learning is non-linear. Complex dynamic systems, such as the learner's language, consist of many different subsystems at many different levels (e.g. phonology, morphology, and syntax or complexity, accuracy, and fluency) that interact and affect each other continually. It is through the interaction of these subsystems that new forms may emerge in a non-linear fashion (de Bot, Lowie & Verspoor 2007; Larsen-Freeman & Cameron, 2013; Verspoor & Behrens 2011). Within a framework that combines usage-based linguistics and a complex dynamic systems theory, which we call a dynamic usage-based approach for short, the aim is to describe the process of development.

In such dynamic usage-based inspired studies, individual learning paths are traced to see when and how different aspects of linguistic use may change and interact over time (Larsen-Freeman & Cameron 2013). Even though learners might overall develop in similar ways on a more general level, every learner is exposed to L2 differently and explores the recurrent patterns in L2 in his or her own way (Verspoor et al. 2012: 240–241). Moreover, differences in initial conditions such as L1, age of acquisition, aptitude, motivation or amount and type of L2 exposure can all influence the direction of development dramatically (de Bot et al. 2007). Therefore even if learners in general may show similarities at a global level, they develop differently when studied at a more fine-grained level (Larsen-Freeman 2006). This means that learning cannot be separated from the learner (Larsen-Freeman & Cameron 2013: 10), and dynamic usage-based studies focus on individual learning trajectories to reveal "the actual process of language acquisition" (de Bot et al. 2007: 19).

In the process of language development, there may be various types of relationships among subsystems that may change over time (van Geert 2008: 192–195). In a conditional relationship, some subsystems may have to be in place before others can develop; for example, Tal Caspi (2010) showed that

in advanced learners of English, the lexicon developed before the syntax did and complexity was a precursor for accuracy. Another commonly found relationship is a competitive one, where the learner uses one construction at the expense of another. For example, if a new construction is learned it may be overused and hence temporarily prevent the use and development of another construction. This process is observed both in in L1 (Abbot-Smith & Behrens 2006; Steinkrauss 2017) and L2 (van Dijk et al. 2011) development. In a supportive relationship, on the other hand, sub-systems develop together because they support each other's growth (Verspoor & van Dijk 2011: 86). This kind of supportive relationship has been observed in L1 development by Kirsten Abbot-Smith and Heike Behrens (2006) and in L2 development. Marianne Spoelman and Marjolijn Verspoor (2010) showed that an L2 Finnish learner showed competition in some complexity measures, whilst in others there was a supportive relationship. Surprisingly, no meaningful relation was found between complexity and accuracy measures. Wouter Penris and Marjolijn Verspoor (2017) showed that two different complexity measures, average sentence length and average noun length, developed rather synchronously throughout the study.

Dynamic usage-based studies also look at degrees of variability in one subsystem as it is assumed that a period of high variability precedes a change in the system through self-organization. In general, an emerging subsystem tends to show a higher degree of variability, often accompanied by a peak, before it settles in a more stable state (van Dijk et al. 2011). Several studies have shown such developmental jumps. Van Dijk et al. (2011) showed a significant developmental jump in the use of *don't* constructions in a 12-year-old Spanish learner of English. In L2 Finnish, Spoelman and Verspoor (2010) found that the use of noun phrases consisting of three or more words showed a clear developmental jump. In another L2 Finnish study, Corinne Tilma (2014) traced two small groups, of four learners each, in different instructional contexts (one more explicit and the other more implicit) and showed different degrees of variability in each learner and different interactions between different variables. The developmental trajectories of the two focal learners suggested similar kinds of relationships between complexity measures. However, the explicitly taught learner showed developmental peaks in the use of cases but the implicitly taught learner did not. Moreover, the explicitly taught learner was more accurate than the implicitly taught learner early on, but both showed significant drops in the number of errors at about the same time and were not very different towards the end. Tilma's study seems to suggest that the type of instruction may affect the developmental paths learners follow. In sum, dynamic usage-based-inspired studies suggest that L2 development is not linear, that variability is an intrinsic property of a developing dynamic system, that different sub-systems may interact with each other, and that the interaction may change over time.

Findings from cross-sectional studies, too, suggest that L2 development is not linear in that different sub-systems may develop at different stages of proficiency. Verspoor et al. (2012) showed that L2 learners of English seem to first develop most in the lexicon, then in the syntactic system and finally again in the lexical system, specifically in the use of multi-word expressions such as phrasal verbs and collocations. Studies on adult Finnish L2 development also suggest that different sub-systems develop at different stages of proficiency. For example, we know from cross-sectional studies on the development of constructions in adult L2 Finnish learners (see Cefling and Topling projects, University of Jyväskylä) that the frequencies of certain constructions - those that cannot be avoided at any stage of development, i.e. negation and local cases - remain rather stable across proficiency stages. However, greater proficiency can be characterized by a higher level of accuracy, as is the case with negation (Martin et al. 2010). Sometimes development is manifested by a more abstract use of a construction, as is the case with local cases (Mustonen 2015: 311). Other types of constructions are acquired only at later stages of development. For example, the use of passive constructions peaks between advanced levels B and C in the Common European Framework of References for Languages (CEFR) (Seilonen 2013: 202). A transitive construction is also used relatively more at later stages of development (Reiman 2011a: 150). Higher proficiency can also be characterized by increased variation within a given construction, e.g. the existential sentence (Kajander 2013: 226), or by the use of the construction in more diverse environments, like transitive constructions (Reiman, 2011b: 28).

5 The study

Within a dynamic usage-based approach, it is assumed that a language user primarily wants to convey some meaning. However, so far L2 usage-based studies have focused mainly on how specific language forms develop over time, e.g. the transitive construction (Reiman 2011a), the existential sentence (Kajander 2013), the passive (Seilonen 2013), relative clauses (Mellow 2006), *do* negation (Eskildsen & Cadierno 2007), *can* constructions (Eskildsen 2008) and negation constructions (Eskildsen 2012). The current study will start from the other side of a form-meaning mapping, with meaning. Taking the extralinguistic concept of evaluation as a starting point, an onomasiological approach is adopted (see Grzega 2012: 271). Since evaluation (feelings and assessment) can be expressed through various grammatical structures, as pointed out by Martin and White (2005), we may expect different types of constructions to be used by the learner. The most likely ones are either the use of a lexical verb or an adjectival phrase. These two ways of expressing evaluation are in formal competition to encode the same content, so the learner must choose one or the other. In Finnish, the two main types of elements that may be used to express evaluation are emotive verbs (see Siiroinen 2001) or adjectives (and some other evaluative or affective elements) (VISK § 1212). If an evaluative verb is used, an adjectival phrase is not normally used (e.g. *Rakastan sinua* 'I love you'). On the other hand, comment clauses with an adjectival phrase normally contain the verb *olla* 'to be', not an evaluative verb (e.g. *Hän on kiva* 'He is nice'). The current study traces the development of each type of construction to see if there are different degrees of variability and developmental jumps, and it investigates the interaction (conditional, competitive or supportive) of the different types of constructions. In addition, we explore how the learner's constructions seem to diversify over time, as suggested by cross-sectional studies. Finally, by comparing the development of the two most frequently used verbal constructions (with the verbs *haluta* 'want' and *tykätä* 'like$_1$'), we explore the usage-based claim that most constructions develop from lexically specific formulas to abstract constructions.

In sum, our three main research questions are:

1. What constructions does the learner use to express evaluation, how do they develop over time and what type of interactions can be observed between the constructions?
2. How does the learner diversify her constructions as she becomes more proficient?
3. Does the development of constructions go mainly from lexically specific items to more schematic, abstract constructions?

Based on the literature reviewed above, we expect the use of both verbal and adjectival/adverbial evaluation constructions to show changing relationships and variability over time. Diversification will occur in the types of constructions, in the types of verbs and adjectives used, and in the types of contexts in which the construction is used. Finally, based on e.g. Mellow (2006), Eskildsen and Cadierno (2007) and Eskildsen (2008, 2012), we expect that initially the constructions will be mainly lexically specific. However, based on e.g. Roehr-Brackin (2014) and Eskildsen (2015), in addition some more abstract schematic constructions might be used from early on, perhaps because the learner is able to transfer the constructions from their L1 or because they are aware of them through instruction.

6 Method

The study traces the development of constructions expressing evaluation in one learner of Finnish as an L2 over the course of 9 months.

6.1 Participant

The participant is Lena (pseudonym), an exchange student at a Finnish university. Lena was 23 years old at the time of the study and her L1 is German. Lena had just arrived in Finland and did not know any Finnish before the study started.

During the study Lena took three Finnish language courses. The first course was a 4-week intensive language course at level A1 in the European Framework of Reference for Languages (Common European Framework of Reference for Languages, Council of Europe, 2001). The second course, at level A2, was held from September to December, and the third course, at level B1, was held from January until April. All of the courses were worth 5 ECTS and comprised 70 contact hours and additional independent study. The first two courses were taught by the first author, a native speaker of Finnish. The third course was taught by another experienced instructor, also a native speaker of Finnish.

6.2 Data collection

The data were collected weekly, spoken data one week and written data the other week. The participant was asked to write or talk about a certain topic, so all the data elicited can be considered free response data. The tasks include topics like "Tell about yourself", "What did you do in the Christmas holiday?" and "Tell me about your hometown" (See Appendix 3 for a full list). The topics were selected in accordance with both the learner's language proficiency and the course contents: the topics were familiar to the participant but not practiced in the classroom. The spoken data include both monologues and dialogues. The other person in the dialogue was either another L2 learner or a native Finnish speaker, usually the first author of this article but sometimes a research assistant or another Finnish instructor. The participant was encouraged to write or speak as much as she could without the use of support materials.

The spoken data were recorded in various ways: in a language studio, with an iPad, or with a recorder (Roland R-05). In the first half of the study, the data collection was done during the lessons; in the second half, outside the lessons. The length of the speaking samples was on average 10.5 minutes (ranging from around 5 minutes to around 19 minutes). The written data were handwritten. During the lessons there was a time limit of approximately 20 minutes for the writing tasks. In the data collection sessions in the participant's free time there was no time limit, but the writing sessions were approximately 15 to 20 minutes long.

6.3 Data selection

Both the spoken and written data were first transcribed in Word following CHAT format (MacWhinney, 2000) to the extent that it was relevant for the analysis of this study (e.g. overlaps were not transcribed) and first explored to see what kinds of extralinguistic concepts were expressed frequently. It was found that expressions of evaluation (finding a thing or an event good/desirable or bad/not desirable) occurred rather frequently and this extralinguistic concept was chosen for further investigation.

The constructions were defined as follows. A verbal evaluative construction encompasses the evaluative verb, all the complements of that verb (subject, object, and adverbial) and optional qualifiers (see Example 8).

(8) *Minä* *tykkä-si-n* **kaikki ruoa-sta.*
I like-PST-1SG *allfood-ELA
'I liked all the food.'

As for an adjectival/adverbial construction, the main word of the evaluative phrase, i.e. the word that makes the phrase evaluative, is an adjective or an adverb. There is normally also a verb, but this verb is usually *olla* 'to be', and not an evaluative verb. The adjectival/adverbial construction hence encompasses the adjective or the adverb, which is in most of the cases the predicative of the sentence. In some sentence types, the adjective is a complement of a noun phrase which is either a subject or the object of the sentence. The other components of these constructions are the non-evaluative verb, the subject and optional qualifiers. (See Example 9 for an example of a copula sentence.)

(9) *ja* **kasvastudeiden* *o-n* *tosi* *hyvä*
and *education be-3SG very good
'and the education is very good'

There was one construction that was difficult to classify. *Lempi* 'favorite' is a fuzzy part of speech as there is no clear consensus on whether it is a noun or an adjective. Unlike adjectives, *lempi* is not declined, and together with its main word it constitutes a compound word (Kielitoimiston sanakirja: New Dictionary of Modern Finnish). Its semantic function is similar to that of adjectives since its meaning is descriptive/attributive, so it has been grouped with adjective constructions for the purpose of the current study.

The first author of this article scrutinized the data for all expressions of evaluation. In other words, it was the meaning of the construction as a whole that determined its selection. The selection of constructions was based on our onomasiological approach: meaning, rather than form, determined the inclusion of a construction in the analysis. It was only for categorization of the chosen constructions into verbal or adjectival/adverbial that the form of the construction became relevant. The constructions finally selected from the written texts were presented in their original context to a panel of three other speakers of Finnish, who were asked whether the expressions expressed positive or negative evaluation. Differences in judgment were resolved by mutual agreement, but when consensus could not be reached, the utterance was removed from the analysis. In general, the panel agreed on most judgments and only a few expressions had to be removed. Extrapolating from the panel judgments on the written data, the spoken data were scrutinized again by the first author. In cases of doubt, she consulted the panel members and removed any potentially problematic utterances.

The spoken and written data were compared. It appeared that the types of constructions used in these two modes were similar both in form (see Appendices 1 and 2 for the forms of *haluta* 'want' and *tykätä* 'like$_1$') and frequency (see Appendix 5). This may be explained by the fact that the participant was an absolute beginner with limited input, for whom it was difficult to make any distinction between spoken and written forms throughout the study. For example, even at the last data points there is no clear distinction between the written and spoken forms of the personal pronouns *minä* vs. *mä* 'I' (see Section 2). Because of the similarity of the spoken and written data, the decision was made to create one corpus. A total of 228 constructions were included in the final analysis. As expected, virtually all of the constructions expressing evaluation turned out to be constructions involving either verb phrases (with the lexical verb expressing like or dislike), or adjectival or adverbial phrases expressing good or bad. Only three expressions could not be categorized into one or other of these two categories. In the first exception, the noun 'adventure' expresses a positive attitude towards an event, and in the second and third one, a series of negative forms of nouns ('no snow, no sun, no sleeping' and 'no cold, no snow, nothing') express a negative evaluation (*Se oli seikkailu minulle mennä … *tuntematon *maahin ja oppia tuntematon kieli* 'It was an adventure for me to go to a new country and learn a new language' ; *Joo, se on Suomessa: ei lunta, ei aurinko, ei *nukkuma* 'Yep, that's Finland: no snow, no sun, no sleeping'; *Mutta nyt *on vain sataa ja ei kylmä, ei *luma … ei mitään* 'But now it's only rain and no cold, no snow … nothing'). Because of the sporadic use of these constructions, they were not analyzed in more detail.

6.4 Normalizing

Because texts of various lengths were produced, the data were normalized for text length. The frequencies of verb and adjectival/adverbial phrases were calculated per 100 words.

6.5 Analysis

In line with the three research questions, the development of constructions was analyzed in three consecutive steps. First, the use of types of constructions expressing evaluations was explored quantitatively. To inspect for peaks and dips in the data, various visualization methods and analysis techniques, such as min–max graphs, were employed. Min–max graphs (van Geert & van Dijk 2002) are graphs that visualize the minimal and maximal values of a variable in a specific period of time. They are calculated for a moving window of a preset number of data points. For example, for a min graph with a window of 5 data points, the first minimal value of a variable would be calculated from the first five data points (points 1–5), the second minimal value would be calculated for the second five data points (2–6), and so on. In our study, we used a moving window of 5 data points for the min–max graph. The distance between the min and the max graphs gives insight into the bandwidth of the scores between which the variable in question varies, i.e. it illustrates the amount of variability.

To explore the relationships between variables longitudinally, the variables were first smoothed using locally estimated scatterplot smoothing (LOESS), a type of local regression (see Peltier 2009). In our data, we based the regression on a window of 10 data points (alpha=0.303).

After exploring non-linear trajectories and dynamic interactions, the data were investigated qualitatively to see how and when diversification of the constructions occurred. Finally, the development of the two most frequently used verbal constructions was explored to assess whether their development was exemplar based or not.

7 Results

In this section, first of all both the frequency development of verbal and adjectival/adverbial constructions and their interaction are described.[1] Then the results of the qualitative analysis are presented and finally we will zoom in on the development in complexity and sophistication of the two most frequent verbal constructions.

7.1 The dynamics of evaluation constructions over time

A look at the type and token frequencies of Lena's constructions to express evaluation (see Figures 1 and 2) reveals three general phases. In phase 1, Lena uses almost exclusively verbal constructions. In phase 2, this pattern flips and Lena uses mostly adjectival constructions, which are more diversified than the verbal constructions in phase 1. In phase 3, Lena mixes the two types of constructions more.

[1]For reasons of readability, the term 'adjectival constructions' will be used in the remainder of this study to refer to the group of adjectival and adverbial expressions of evaluation.

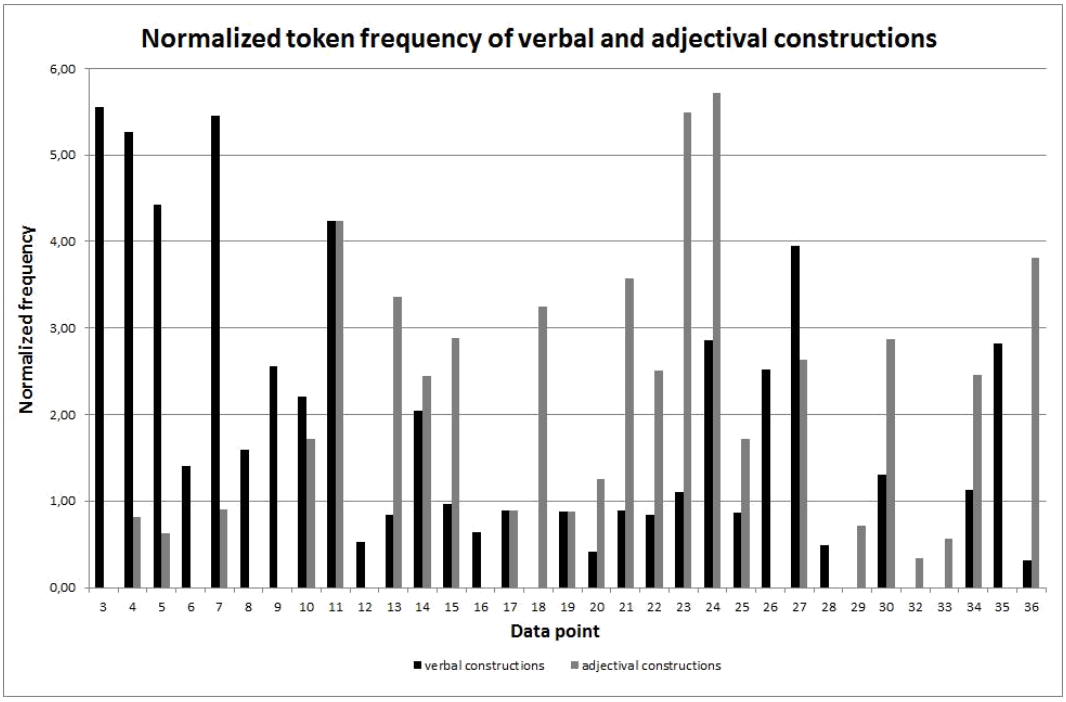

Figure 1. Normalized token frequency of verbal and adjectival constructions (per 100 words).

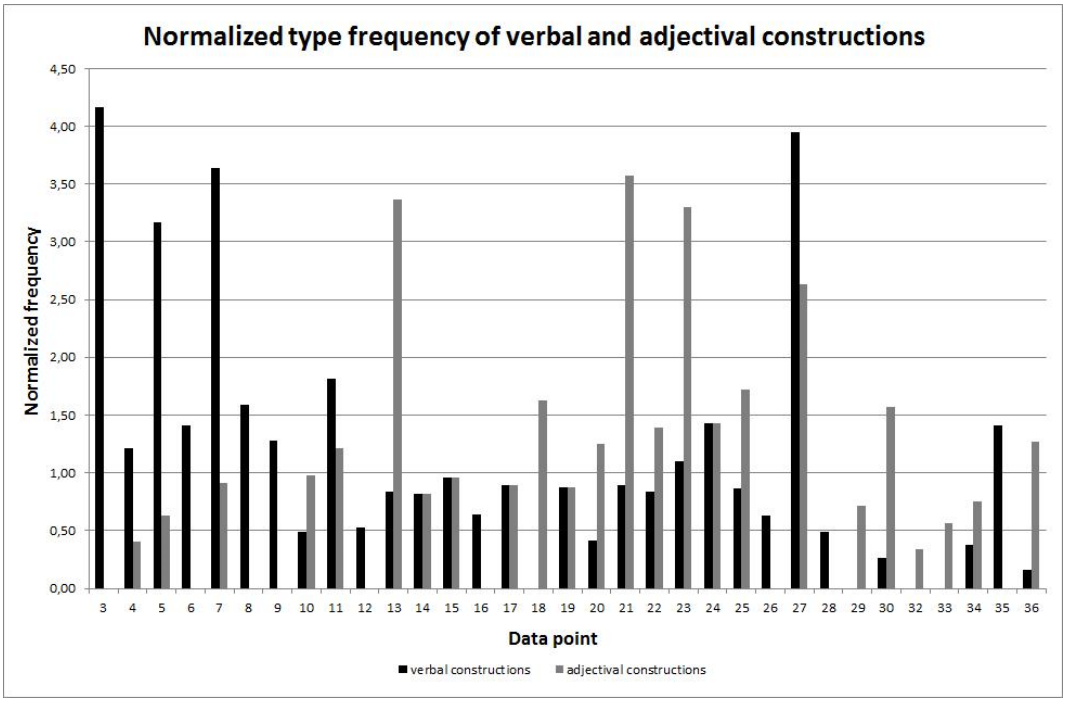

Figure 2. Normalized type frequency of verbal and adjectival constructions (per 100 words).

The first phase, when the token frequency of verbal constructions is higher than that of adjectival constructions (see Figure 1), roughly spans weeks 3–9. In this phase there are on average 3.75 verbal and 0.34 adjectival expressions of evaluation per 100 words. The average type frequency of verbal constructions is also higher (2.35 per 100 words for verbal vs. 0.28 per 100 words for adjectival constructions), indicating that Lena uses more different verbal than adjectival constructions.

The second phase starts around week 10 and lasts until about week 25. In this phase, Lena begins to explore adjectival constructions more intensely. In this phase the token frequency of adjectival constructions is mostly higher than or as high as the token frequency of verbal constructions (on average 1.26 verbal constructions vs. 2.50 adjectival constructions per 100 words). The type frequency of adjectival constructions is also higher than that of verbs (on average 0.84 for verbal and 1.46 for adjectival constructions).

The third phase starts in about week 26 and lasts until the end of the study, in week 36. In this phase, Lena's use of expressions of evaluation shows a more mixed pattern: in some texts Lena prefers verbal constructions over adjectival constructions, in some texts it is the contrary. It seems that in general one construction type is not used at the expense of the other. The average token and type frequencies for this period are 1.25 and 0.73 for verbal and 1.34 and 0.79 for adjectival constructions, respectively.

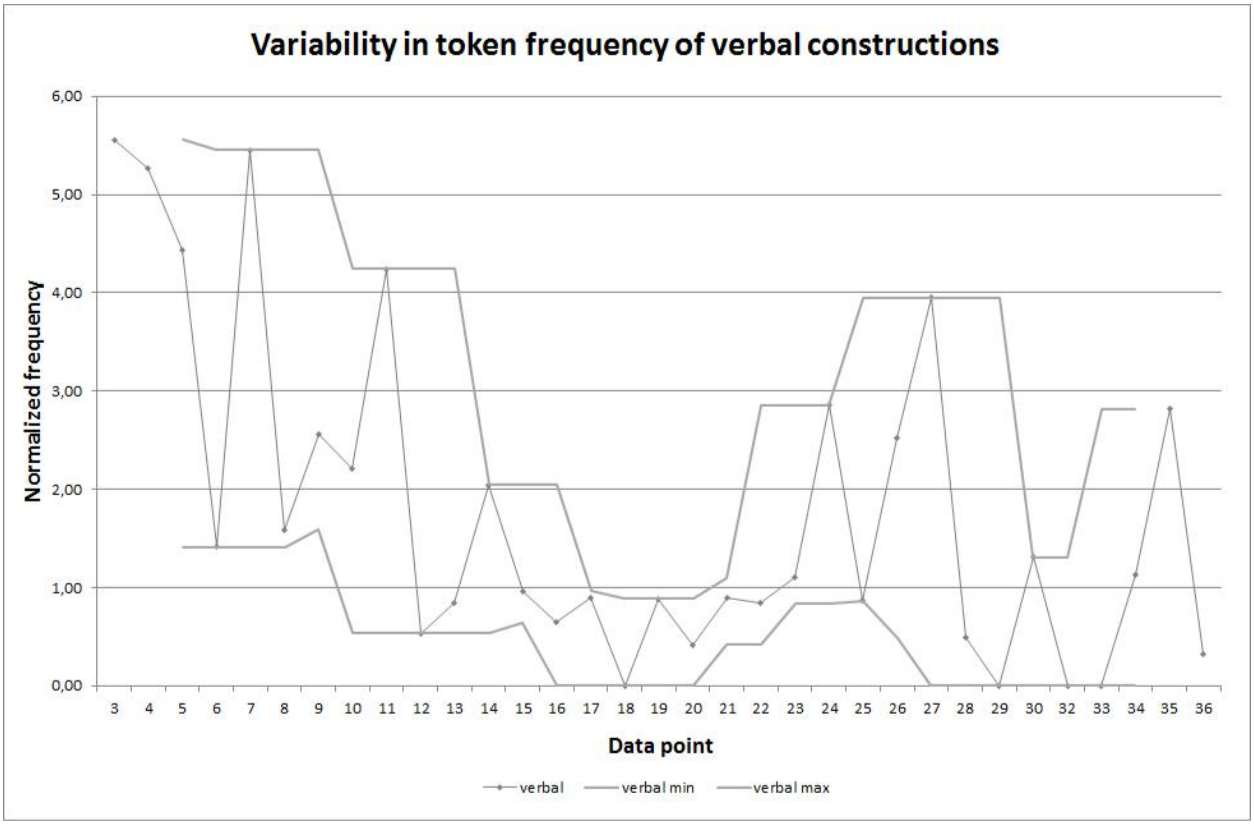

Figure 3. Moving min–max graph showing the variability in the token frequencies of verbal constructions.

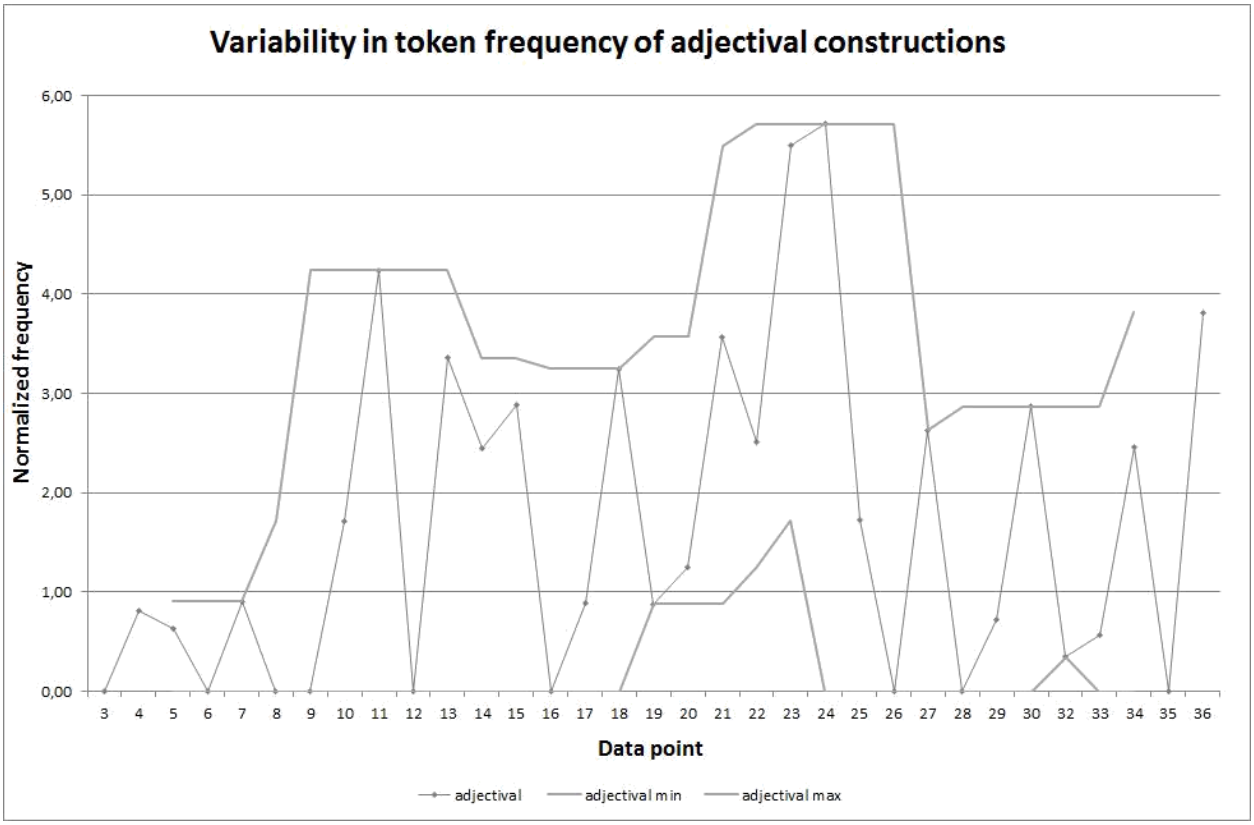

Figure 4. Moving min–max graph showing the variability in the token frequencies of adjectival/adverbial constructions.

The division into three phases of development is also visible in the min–max graphs as they show different degrees of variability in the token frequency of verbal and adjectival constructions (See Figures 3 and 4). In phase 1, the variability in the use of verbal constructions is much greater than that of adjectival constructions, as illustrated by the larger and smaller distance between the min and max graphs respectively. In phase 2, this pattern is reversed as there is very little evidence of variability in the use of verbal constructions. In phase 3, the pattern is more mixed, but exhibits overall less variability than in the previous phases of high variability. It is important to note that the amount of variability does not intrinsically depend on the token frequencies of the constructions: a relatively low average use of constructions might go along with a relatively high amount of variability (as in the last weeks for adjectival constructions), and the opposite is equally possible.

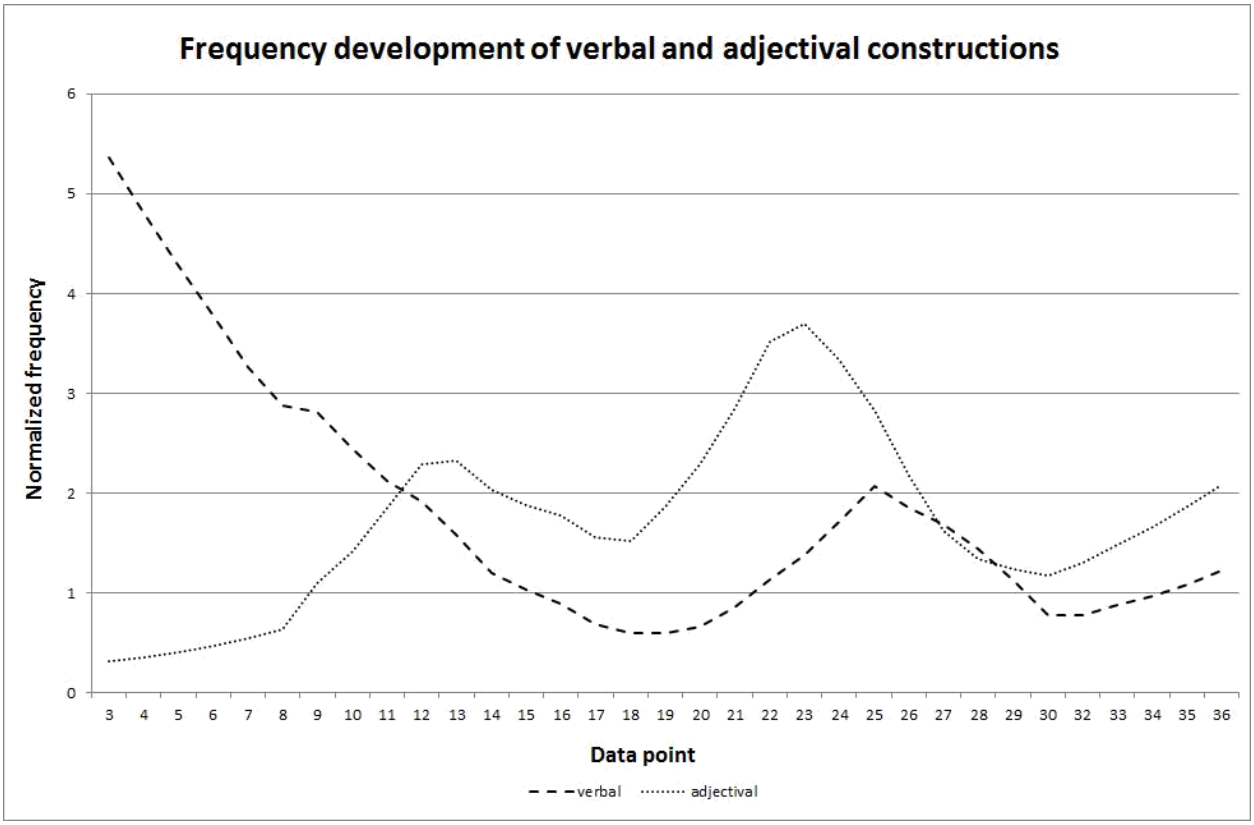

Figure 5. Smoothed normalized token frequencies of verbal and adjectival constructions.

To explore the changing interactions between verbal and adjectival constructions in more detail, the token frequencies have been smoothed with a LOESS-function. Figure 5 shows a rather strong competitive relation in phase 1, where verbal constructions are used almost exclusively. In phase 2, adjectival constructions show a weak competitive relation with verbal constructions. Towards the end of the study, the constructions seem to synchronize in their development and stabilize at a similar level.

7.2 Diversification

To enable a qualitative look at the construction development, the different types of constructions used to express evaluation are shown in Figures 6 and 7. The English equivalents of verbal constructions are shown in Table 1 and of adjectival constructions beneath Figure 7.

Table 1 shows all the evaluative verbal constructions that Lena used during the data collection period together with their characteristics in standard Finnish. The first column shows the Finnish verbs. The table lists two verbs that correspond to 'like' in English: *tykätä* 'like$_1$' and *pitää* 'like$_2$'. While *tykätä* is colloquial (Kielitoimiston sanakirja: New Dictionary of Modern Finnish), *pitää*, just like all other verbs, is rather general and not marked for a specific register. 'Linguistic characteristics', the second column, shows the role of the subject and the different types of complements the verb may have, as suggested by the New Dictionary of Modern Finnish (Kielitoimiston sanakirja) and the Guideline Database of the Finnish Language Office (Kielitoimiston ohjepankki). Causative verbs are shown separately at the bottom because of their different grammatical structure: the experiencer is expressed as a syntactical object rather than the subject of the construction (Siiroinen, 2001). In the third column, NP stands for noun phrase, with government expressed in parentheses, and NFC stands for a non-finite clause. The fourth column indicates the nearest equivalent in English. The fifth column gives the

normalized frequency of the constructions in the corpus of this study. The last column indicates the week the construction was either explicitly taught or presented, which means that the construction occurred in the learning material without being particularly emphasized.

Table 1.

Verbal constructions in the corpus of this study.

Verb in Finnish	Linguistic characteristics		Verb in English	Normalized freq. in corpus	Teaching
	Subject	Complement			
tykätä	'experiencer'	NP (elat.), NFC	like$_1$	15.92	explicit: week 3
pitää	"	NP (elat.)	like$_2$	4.80	explicit: week 3
haluta	"	NP, NFC	want	24.61	explicit: week 3
vihata	"	NP (part.), NFC*	hate	1.72	explicit: week 3
rakastaa	"	NP (part.), NFC*	love	3.34	explicit: week 3
odottaa	"	NP	look forward to	0.42	presented
nauttia	"	NP (elat.)	enjoy	0.70	presented
maksaa paljon			cost a lot	0.25	presented
causative verbs					
kiinnostaa	absent or 'instigator'	object: 'experiencer' in the partitive case	interest	0.63	explicit: week 12
auttaa	"	"	sth helps sb	2.03	presented
piristää	"	"	cheer up	1.32	explicit: week 12
ärsyttää	"	"	annoy	2.18	explicit: week 12
naurattaa	"	"	make sb laugh	1.08	explicit: week 12

* While non-finite clauses may be used with *rakastaa* 'love' as well as *vihata* 'hate', this is a borderline case (The Guideline Database of the Finnish Language Office, Kielitoimiston ohjepankki)

In Table 1, the verbs *odottaa* 'look forward to', *maksaa paljon* 'cost a lot', and *auttaa* 'something helps somebody' cannot be categorized directly as evaluative verbs but the way the participant in the study used them in the particular context was evaluative. These phrases are presented in Examples 10, 11 and 12.

(10) *Hän odottaa *lomalla, koska *lomassa Minni menee *isolle.*
'She (mother) looks forward to a holiday because on holiday Minni (daughter) will go to father's place.'

(11) **Suomii on &myö what's@s expensive@s, kaikki maksaa paljon *raha, joo.*
'Finland is &also what's@s expensive@s, everything costs a lot of money, yes.'

(12) **Se *autta *minulle laittaa *ruoka, *syöda *suklata ja leipoa, kun olen masentunut.*
'It helps me to cook, eat chocolate and bake when I'm depressed.'

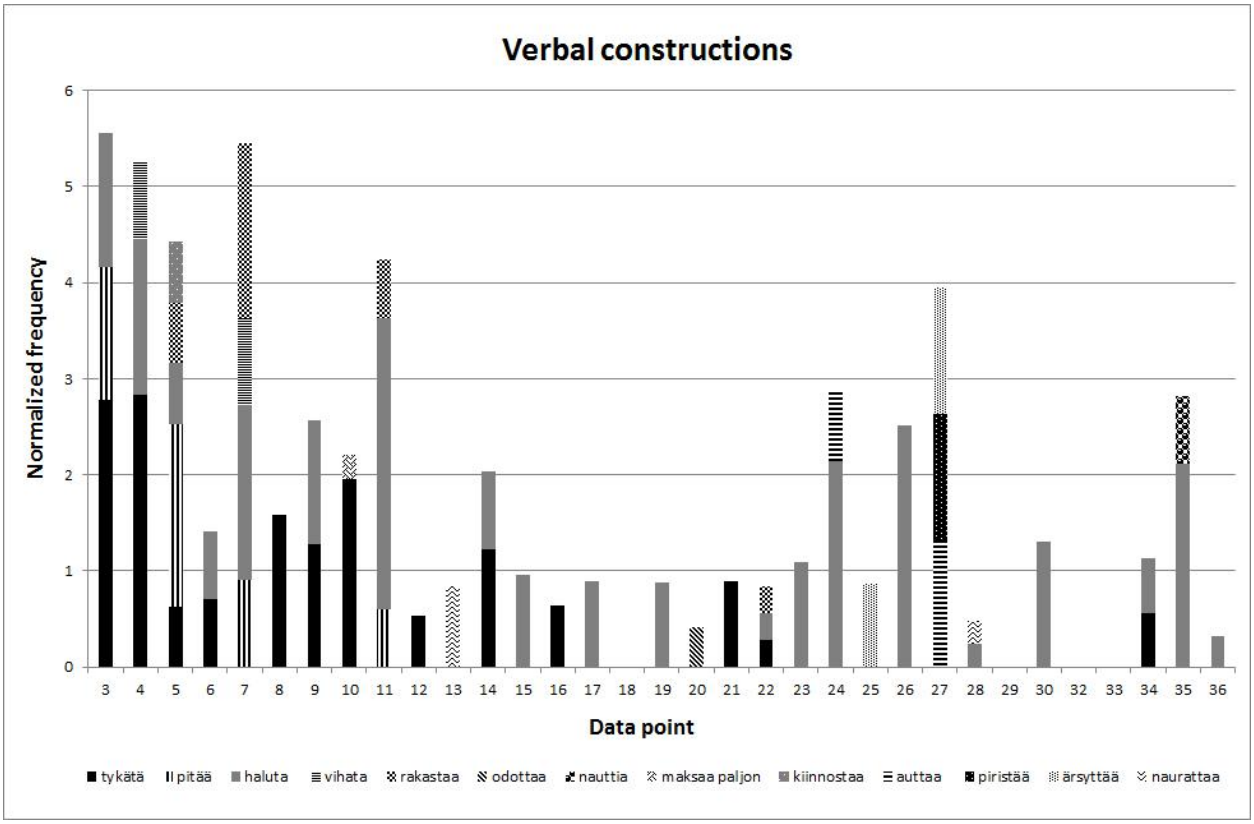

Figure 6. Bar chart showing the different types of verbal constructions.

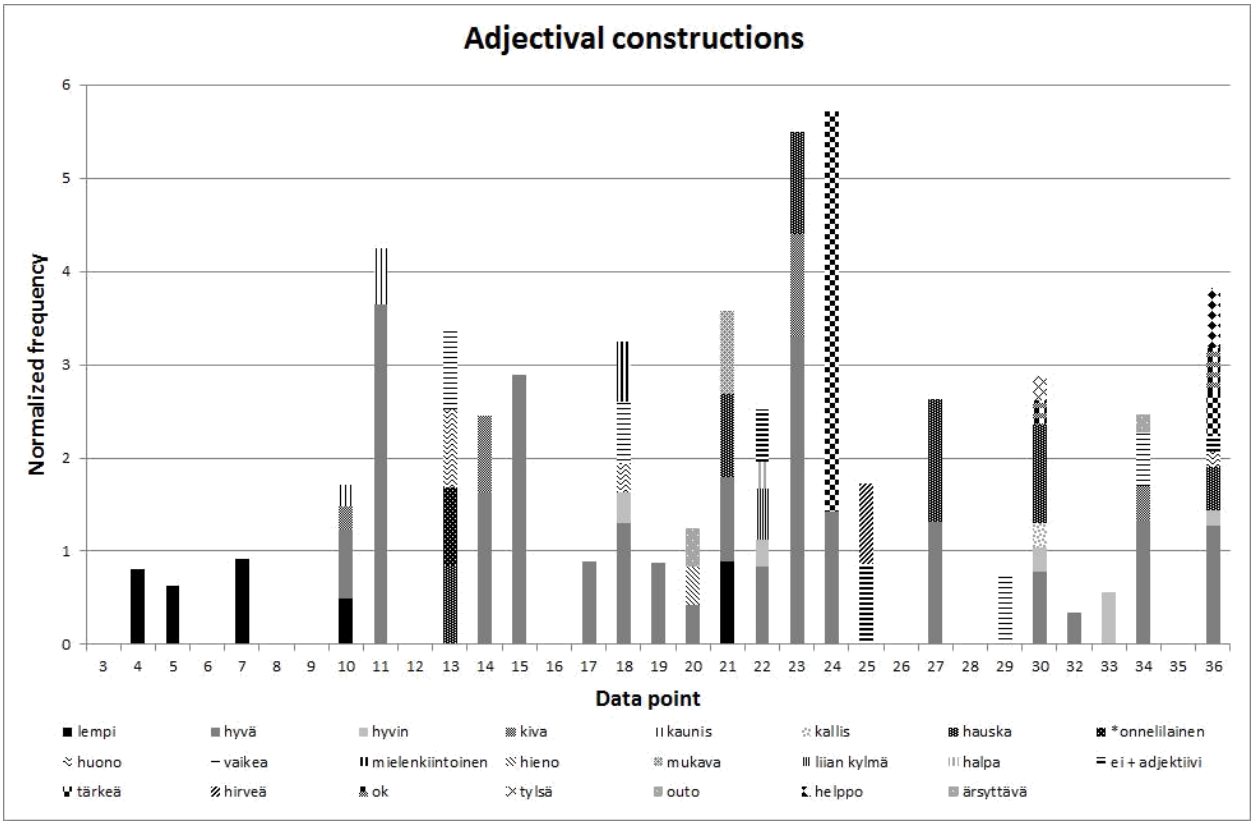

Figure 7. Bar chart showing the different types of adjectival and adverbial constructions.

lempi 'favorite'; *hyvä* 'good'; *hyvin* 'well'; *kiva* 'nice$_1$'; *kaunis* 'beautiful'; *kallis* 'expensive'; *hauska* 'fun'; **onnelilainen* 'happy'; *huono* 'bad'; *vaikea* 'difficult'; *mielenkiintoinen* 'interesting'; *hieno* 'great'; *mukava* 'nice$_2$'; *liian kylmä* 'too cold'; *halpa* 'cheap'; ei + adjektiivi 'no + adjective';[2] *tärkeä* 'important'; *hirveä* 'awful'; *ok* 'okay'; *tylsä* 'boring'

Figures 6 and 7 show that both the verbal and the adjectival constructions develop into more complex and sophisticated constructions over time. In the first phase (weeks 3–9), Lena uses 6 different verbal constructions but only 1 adjective-like construction - *lempi* 'favorite' (e.g. *lempiruoka* 'favorite food') - to express evaluations. The verbal constructions Lena uses are *tykätä* 'like$_1$', *pitää* 'like$_2$', *haluta* 'want', *rakastaa* 'love', *vihata* 'hate' and the negative form of *kiinnostaa* 'interest'. Except for *kiinnostaa* 'interest', the verbal constructions are relatively simple constructions in which the subject is the experiencer. They were presented and practiced in the classroom in week 3. *Kiinnostaa* 'interest' is categorized as a causative emotive verb and was also presented in some course material in week 3. As time passes (phases 2 and 3), Lena uses verbal constructions that are either syntactically more sophisticated (the causative emotive verbal constructions *ärsyttää* 'annoy', *piristää* 'cheer up', *auttaa* 'something helps somebody', and *naurattaa* 'something makes somebody laugh') or more creative and less fixed (*hän odottaa lomalla* 'she is looking forward to a holiday'). The simple constructions she was relying on initially (*tykätä* 'like$_1$', *pitää* 'like$_2$', *rakastaa* 'love', *vihata* 'hate') disappear from her use.

[2] Ei + adjektiivi 'no + adjective' forms its own category because these expressions are non-target like, learner language forms used to express evaluation. This category includes the expressions: *ei siisti* 'no clean'; *ei hauska* 'no fun'; *ei kaunis* 'no beautiful'; *ei tosi hyvä* 'no very good'.

From week 10 on, Lena starts to explore adjectival constructions. In text 10, Lena uses three new adjectival constructions: *hyvä* 'good', *kiva* 'nice', and *kaunis* 'beautiful'. In this second phase (weeks 10–25), few verbs are used. Lena uses mainly the *tykätä* 'like$_1$' construction, which had been the most frequent one in previous weeks, and the *haluta* 'want' construction. However, the use of these constructions becomes more advanced (see Appendices 1 and 2 for the development of the *haluta* and *tykätä* constructions). In phase 2, Lena's adjectival construction repertoire expands and the use of these constructions becomes more advanced, too. The h*yvä* 'good' construction emerges in its adverbial form *hyvin* 'well' for the first time in text 18. The first comparative forms also appear: **kivampi* 'nicer', with a slightly inaccurate spelling, and *parempi* 'better' are used in text 14. The *hyvä* 'good' construction is the adjectival construction that Lena uses most frequently and it is the one that becomes most complex and diversified (see Example 13).

(13) *Mutta paras men-nä nukku-ma-an.*
But best go-INF sleep-3.INF-ILL
'But it is best to go to sleep.'

7.3 Development of the haluta and tykätä constructions: item-based construction growth

The quantitative and qualitative results have shown that Lena initially relies mainly on constructions based on the verbs *haluta* 'want' and *tykätä* 'like$_1$'. They are the most frequent and also the ones Lena keeps producing in phase 2, when she uses mostly adjectival constructions. The following section therefore focuses on these two item-based constructions and discusses their developmental trajectories. As shown by the detailed analysis below, the *haluta* 'want' construction seems to develop from a rather fixed formula which later gets analyzed, while the *tykätä* 'like$_1$' construction is variable right from the start and therefore develops from a more schematic construction than the *haluta* 'want' construction.

7.3.1 *The haluta construction.*

All uses of the *haluta* 'want' construction are shown in Appendix 1. At first, Lena's *haluta* 'want' constructions are chunk-like, relatively fixed expressions. In weeks 3, 4 and 5 she uses *haluta* 'want' only in the conditional form and only with one verb: *matkustaa* 'travel' (see Table 2). The expressions are not entirely fixed because there is some variation in the adverbials within the non-finite clauses (4.1: *Jyväskylästä Saksaan* 'from Jyväskylä to Germany', 4.2: *lentokoneella* 'by plane', Appendix 1) and besides the first person singular form Lena uses *haluta* in a second person singular form (4.4) and in 4.3 she omits the verb *matkustaa* in the complement. However, even without that verb, the context makes clear that the utterance as a whole still expresses the wish to travel. This suggests that the *haluta* 'want' construction is initially tied to a specific meaning and a specific context and is relatively fixed.

Table 2.
The verb haluta: verb forms, type of different complements, and the clausal contexts

Text	Verb				Complements		Subordinate clause	Number of Utterances
	Person	Tense	Mood	Negation	NP	NFC verbs		
3–5	1SG, 2SG	PRS	COND	No	0	1	no	6
6–9	1SG, 3SG	PRS	COND, IND	No	1	4	no	5
11–14	1SG, 3PL	PRS	COND, IND	No	1	5	no	7
15–24	1 SG	PRS, PST	COND, IND	Yes	0	7	yes	8
26–36	1SG, 2SG, 3SG, 1PL, 3PL	PRS, PST	COND, IND	Yes	1	9	yes	15

Over time, in phases 2 and 3, Lena's *haluta* 'want' construction becomes more diverse as both the complements and forms of *haluta* become more varied (see Table 2). Regarding complements, in weeks 6 and 7, Lena uses the verb *haluta* with other verbs than *matkustaa* 'travel' for the first time (6.1: *haluaisin sanoa* 'I would like to say' and 7.1: *Marja haluaisi oppia* 'Marja would like to learn'). After that, Lena's verb repertoire of non-finite clauses develops further (see Table 2 and Appendix 1) and she also uses some non-frequent verbs within the *haluta* 'want' construction, such as *juhlia* 'celebrate' (23.1) (see a frequency dictionary of Finnish: Saukkonen, Haipus, Niemikorpi, Sulkala 1979). The *ma*-infinitive form is also used in the construction (30.1 and 30.2). Apart from the main verb, also the noun phrases in the non-finite clauses become more varied and elaborate. This can be seen for example when comparing phrases 3.1 and 17.1 (see Appendix 1). In 3.1, the noun phrase in the non-finite clause consists of co-ordinate elements. In contrast, the noun phrase in 17.1 consists of dependent elements. The use of the modifiers **ennemään* 'more' and *suomen* Finland-GEN 'Finnish' makes the noun phrase more elaborate.

The grammatical variation of the *haluta* 'want' construction also increases in phases 2 and 3, as we can see in Table 2. Lena conjugates the verb *haluta* in various forms. In the first person singular, it is used in the affirmative in the conditional (4.1: *haluaisin*), the present (indicative) (9.2: *haluan*) and the past (15.1: *halusin*), and in the negative in the present (22.1: *en halua*) and the past (30.4: *en halunnut*). In the second person singular, *haluta* is used only in the conditional (4.4: *haluaisit*). In the third person singular, *haluta* is used in the conditional (7.1: *haluaisi*) and the present (indicative) (7.2: *haluaa*). The plural forms are the third person in the conditional (11.5: *haluaisivat*) and the first and third persons in the present (30.2: *haluamme* and 35.1: **haluvat*). In addition, the clausal context in which the construction emerges becomes more varied. Questions are used already from the start but in phase 3 Lena also uses the constructions in subordinate clauses as well as in main or co-ordinate clauses (26.2, 30.3, 35.1).

In general, the complexity of Lena's *haluta* expressions increases over time. Importantly, development is not always demonstrated by increased complexity. Sometimes, the learner's increasing analysis of the construction may lead to simpler forms, which can be seen when comparing the phrase 14.2 to Lena's expressions in weeks 3–5, e.g. phrase 4.1. Phrase 14.2 conveys the same meaning as the fixed phrase 'I would like to travel' in Lena's early production, but instead of relying on that fixed formula Lena is now able to use less complex forms that are based on a more schematic construction: *haluta* is used in the present tense (indicative), and *mennä* 'go' and *käydä* 'visit' in a non-finite clause are generally more frequent than *matkustaa* 'travel'.

Phrase 35.1, produced in the penultimate data point, is a good example of the increased

complexity of the *haluta* construction. *Haluta* is conjugated in the third person plural and the construction is used in a subordinate clause. The object of *haluta* is a transitive verb, *tietää* 'know'. The object of *tietää* is a subordinate clause which is an indirect question. In the phrase there is also another *haluta* construction. This co-ordinate clause is also relatively complex because it is a non-finite clause of five words including correctly used plural partitive forms.

In summary, the *haluta* construction develops from a relatively fixed chunk into a highly variable, schematic construction. This variable construction, rooted in an originally fixed pattern, is based on the development of more abstract knowledge.

7.3.2 *The tykätä construction.*

All uses of the *tykätä* 'like$_1$' construction are shown in Appendix 2. This construction is the second most frequently used construction among Lena's verbal expressions of evaluation. Lena uses it frequently in the first phase (weeks 3–10) but then its frequency decreases (see Appendix 2). Lena's use of this construction does not begin with lexically fixed phrases, as was the case with the *haluta* construction, but is variable right from the start. Over time it develops even more in terms of sophistication and complexity. The construction becomes more complex when Lena conjugates the verb *tykätä* 'like$_1$', adds new lexical items (both noun phrases and non-finite clauses) to the construction and uses it in more diverse syntactic environments.

In weeks 3–5, Lena uses 15 different noun phrases and 3 different verbs in non-finite clauses within the *tykätä* construction (see Table 3). In the same period, the *tykätä* verb itself is conjugated in three different forms (1SG affirmative, 1SG negative, 2SG affirmative question). Hence, Lena's learning of this construction does not begin with the use of a fixed formula but the construction exhibits a greater number of different instantiations than the *haluta* construction, pointing to a more schematic construction.

Table 3.
The verb tykätä: verb forms, type of different complements, and the clausal contexts

Text	Verb				Complements		Subordinate clause	Number of utterances
	Person	Tense	Mood	Negation	NP	NFC verbs		
3–5	1SG, 2SG	PRS	IND	Yes	15	3	No	10
6–9	1SG,3SG	PRS	IND	No	1	4	No	4
10–14	1SG, 2SG	PRS	IND	No	3	9	Yes	9
21–34	1SG	PRS, PST	IND	No	1	1	Yes	5

In week 5, a non-finite clause is used in the *tykätä* construction for the first time. From that week on, Lena starts to use more different verbs within the construction (see Table 3). Also, the noun phrases and non-finite clauses within the construction become more sophisticated and less general as development proceeds. For example, phrases 4.3 and 4.5 are much broader and more general evaluations than the evaluation expressed in phrase 10.1 (see Appendix 2). Diversification of the non-finite clauses also occurs over time. A fixed chunk, *laittaa ruokaa* 'cook (food)', is used in the first two instances (5.1 and 8.1). The clauses become more varied later on (e.g. 9.1: *laulaa kuorossa*, 'sing in a choir'; 10.5: *oppia kieliä* 'learn languages'; 14.1: *katsoa elokuva* 'watch a movie') and the *ma* infinitive is used (10.6). The construction also gets more flexible when Lena varies the construction syntactically. Like the *haluta* 'want' construction, the *tykätä* 'like' construction occurs in more varied clausal contexts, as it is used in subordinate clauses (14.2, 22.1, and 34.1). In addition, the form of *tykätä* becomes more flexible. After four different forms of the present tense in weeks 3–6, the verb is used in the past form (21.1) in week 21.

To summarize, Lena's use of the *tykätä* 'like$_1$' construction starts with lexically variable instantiations of a more schematic construction. Relatively simple and broad evaluations with *tykätä* 'like$_1$' gradually develop into more sophisticated expressions with increased variation both in the constructions (new lexical items in both noun phrases and non-finite clauses) and in her use of the past tense, all occurring in more diverse environments.

8 Discussion

Taking an onomasiological approach and a dynamic usage-based perspective, we explored how an absolute beginner of Finnish would express evaluation, that is, whether she liked something or not. We followed Lena week by week with either an oral interview or an informal writing task over a 9-month period in which she took three different courses in Finnish. There were three main areas of interest: (1) Did the constructions she used show interactions between different types of constructions or dynamic patterns of variability - of peaks or dips - as expected from the complex dynamic systems theory literature? (2) Did the constructions she used show signs of diversification, as predicted by cross-sectional studies? And finally, (3) were the constructions she used initially lexically specific fixed formulas as traditionally assumed by the usage-based literature?

To express evaluation there are two main types of constructions available, those with a lexical verb expressing that something is liked or not and those with an adjective expressing that something is good or bad. As a speaker has to make a choice between these two types of construction, the two are in formal competition for encoding the same content. In our data, we indeed found that the speaker expressed evaluation either by means of a lexical verb (such as like) or an adjective (such as good). After categorizing the expressions for types, we clearly saw non-linear developmental patterns both in the interactions among the constructions and in patterns of variability.

In the interaction between the constructions, we found three broad phases. In phase 1, verbal constructions were used almost exclusively. In phase 2, the use of verbal constructions decreased drastically and adjective constructions were used more frequently than verbal ones, and in phase 3, the use of the two types of constructions leveled off and there were no longer any big differences between the use of the constructions. In complex dynamic systems terms, this means the constructions were competitive in phase 1, competitive in phase 2, and supportive in phase 3. Such clear non-linear developmental patterns have been found earlier, especially among beginners. Van Dijk et al. (2011) showed such wave-like patterns with strong competition and strong peaks of overuse early on in the development of negative verbal expressions. Tilma (2014) showed strong competition between the use of the nominative and other cases early on, and Spoelman & Verspoor (2010) showed especially competition between simple sentences and other types early on. According to van Geert (2008), and in line with views held in information processing theory (e.g. DeKeyser 2007; Robinson 2005; Skehan 2003), these wave-like patterns are attributable to the learner's limited resources, for example, in what the learner can pay attention to. Other internal resources may be related to aptitude and motivation while external resources are related to the amount of meaningful input and the frequencies with which constructions are heard. In Lena's case, she was in an instructional context in an L2 environment. We do not know whether explicit instruction, which was given on verbs early on, or just the fact that a verbal expression is simpler to use, influenced her strong preference for verbal constructions to express evaluation in the early stages of her learning.

The competitive relationship between the two types of construction due to the learner's limited resources is also seen in the number of different constructions Lena uses to express evaluation. In phase 1, verbal constructions are not only used more frequently than adjectival constructions, but also in a more variable way. In phase 2, when the frequency of adjectival constructions begins to increase, verbal constructions are used less and in a less diverse manner. Once Lena starts to explore adjectival

constructions in phase 2, she falls back on using the one most entrenched verbal construction from earlier use. These findings support a view of a developing language as a complex system: when one component of a system changes, other components of the system are also affected. The different aspects of linguistic use do not develop in isolation but they interact with each other (Verspoor & Behrens 2011).

The data also showed dynamic patterns of variability. In phase 1, the high degree of variability of token frequency in Lena's verbal constructions may indicate that she focuses on them first. A narrowing moving min-max window of verbal constructions in the middle of the period of observation (Figure 3), i.e. in phase 2, shows decreased variability in Lena's use of verbal constructions and suggests that Lena is not trying out the verbal system as intensely as initially. Once Lena found the most effective strategy she settled with it and discarded some of the simpler verbal constructions she had been using. In complex dynamic systems theory, variability is seen as functional in that makes it possible for the learner to choose the best constructions for his or her communicative needs (van Dijk et al. 2011). A widened moving min-max window of adjectival constructions after the initial phase shows that the variability in adjectival constructions remains relatively large throughout the observation period. This suggests that after the initial phase, Lena explores adjectival constructions.

As mentioned earlier, one possible explanation for the more frequent and variable use of verbal constructions initially is teaching. The verbal constructions Lena uses at the beginning, *tykätä* 'like$_1$', *pitää* 'like$_2$', *rakastaa* 'love', *vihata* 'hate', *haluta* 'want' and *kiinnostaa* 'interest' were practiced in the classroom in week 3. Moreover, verbal constructions in general were emphasized in teaching and therefore they might have been more salient. However, some adjectives were covered in week 4, when students were encouraged to collect adjectives from both their exposure outside the classroom and from the learning materials, but still adjectives do not emerge until later. Despite their introduction, adjectives were not in fact practiced as much as verbal expressions, though.

As far as the diversification of constructions is concerned, we noted a clear development over time: Lena's repertoire of evaluative constructions is not only considerably greater but also more diversified at the end of the period of observation. Moreover, the constructions develop in terms of complexity and sophistication.

The third question in this study was whether the development of constructions goes from lexically specific items to more schematic, abstract constructions. We found that the two most frequent verbal constructions did both develop in terms of complexity and sophistication over time but one developed from a rather fixed formula while the other exhibited a greater number of variable instantiations already initially.

The development from lexically specific items to more abstract schemas of the *haluta* 'want' construction is in line with previous research, including Mellow (2006) and Eskildsen (2008, 2012). Initially, Lena uses *haluta* 'want' with only one verb, *matkustaa* 'travel', as the complement. This semi-fixed expression is used exclusively in the conditional and only in the first and second person singular forms. In weeks 3–6 *matkustaa* 'travel' continues to be the only complement verb even though she uses other verbs and types of complements in other constructions with for example *tykätä* 'like$_1$' and *rakastaa* 'love'. It seems that there are no open slots in the *haluta* 'want' construction, so we may assume that she first learned it as a lexically specific, un-analyzed whole. This is not surprising, as Lena most likely picked the construction up from a classroom activity in week 3 in which students had to tell each other where they would like to travel in Finland. Later, from week 6 on, Lena seems to analyze parts of the construction when she uses new verbs in the non-finite complement clause.

One interesting observation is that development is not always from simple to more complex constructions. The conditional form that Lena uses initially can be considered more complex than the present (indicative) form from a formal point of view because it contains more morphemes (conditional: *halua-isi-n*, present (indicative: *halua-n*). In the development of this fixed construction, Lena first uses the conditional and only later the indicative form.

Other constructions she learned are more variable from the beginning. Verbs like *tykätä* 'like$_1$', *pitää* 'like$_2$', *rakastaa* 'love' and *vihata* 'hate' are used more variably in the first and second person

singular and in affirmative and negative forms. Also non-evaluative verbs such as *olla* 'be', *syntyä* 'be born' and *asua* 'live' are used in various grammatical forms. We traced the *tykätä* 'like$_1$' construction in detail. Already from the beginning Lena uses different noun phrases and later non-finite clauses of different kinds in the construction, which leads us to the conclusion that this construction is more freely productive already initially. This finding is in agreement with the development of the *gehen* construction obtained by Roehr-Brackin (2014) and the development of some non-target-like negation constructions obtained by Eskildsen (2012) and of a declarative copula question obtained by Eskildsen (2015).

As Roehr-Brackin (2014) suggests, explicit instruction may play a role in construction development. The *tykätä* 'like' construction was taught in the classroom as a way to express evaluations and it was practiced extensively. The instruction aimed to help the learner notice the different types of *tykätä* construction as well as the communicative functions of the construction's components. That is why it might have been easier for Lena to abstract a more general slot after *tykätä* compared to *haluta*, which was not analyzed or used to the same extent as the *tykätä* construction. However, the *haluta* construction was also presented in various forms in the learning material. The different learning trajectories of *tykätä* and *haluta* are in line with the assumption in usage-based linguistics that type and token frequencies play different roles in learning constructions. However, this is only speculative as no information on input frequencies is available from outside of the classroom and the information on input frequencies in the classroom is limited to the learning material and the first author's notes (e.g. no video or audio material is available). Also, no information about Lena's explicit knowledge of the constructions is available. Further research on this particular area is thus needed.

9 Conclusion

The current study traced the individual learning trajectories of an adult beginner L2 Finnish learner. This investigation of the changes in a longitudinal setting enhances our understanding of both quantitative and qualitative aspects of Finnish L2 development. Our results provide further support for the view of learner language as a dynamic system in which patterns wax and wane and in which a change in one component has the potential to affect the whole system.

This study has clearly shown that there are dynamic patterns of competition among the types of construction that a learner chooses to use to express the extralinguistic concept of evaluation. In this particular case, there was a strong preference to use lexical verbs first, and then adjectives. The study has also shown that variability plays a role. When the verbal construction was preferred, it showed a high degree of variability in token frequency and in the number of types of verbs that were used. When the adjective construction was preferred, not only did the number of verb constructions decrease, but so too did the number of different types. Moreover, in this phase, there was a reliance on a verbal construction already familiar to the learner. This study has therefore shown that investigating the development and interaction between constructions used to express a certain notion can shed light on L2 development. The results also show that development and learning are not solely manifested in increasing complexity or the use of more infrequent lexical items to fill the slots in constructions, but also in an advanced analysis of constructions on the part of the learner, leading to the use of structures that seem simpler on the surface but at a deeper level are based on greater understanding.

We also aimed to investigate whether L2 constructions develop from lexically specific items to more schematic, abstract constructions. The study has confirmed that the learning of L2 constructions is in some cases item based (see Mellow 2006; Eskildsen 2008). However, another highly frequent and superficially similar verbal construction in our data did not develop from a fixed formula. The role of instruction and the learner's explicit knowledge (see Roehr-Brackin 2014) as well as possibly input frequencies may have played a role in the different developmental trajectories.

This study traced the development of one single learner and her specific path of development

cannot be generalized to others. However, if other learners in a similar context show the same general patterns of verbal constructions before adjectival ones then our onomasiological approach may have enabled us to gain a new insight into L2 development.

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Appendix 1. Development of the *haluta* 'want' construction.

phrase	co-ordinate clause/main clause	Want	NFC: verb	NFC: NP / NP	other argument	co-ordinate / subordinate clause
3.1		**Haillo-ia-ni* *Want-COND-1SG intended meaning: Halua-isi-n Want-COND-1SG*	**matkest-a* *travel-INF	*Lappi-in, *Hankasalmie-lle ja Oulu-un.* Lapland-ILL, *Hankasalmi-ALL and Oulu-ILL		
4.1		*Halua-isi-n* Want-COND-1SG	*matkusta-a* travel-INF	*Jyväskylä-stä Saksa-an.* Jyväskylä-ELA Germany-ILL		
4.2		*Ja halua-isi-n* And want-COND-1SG	*matkusta-a* travel-INF	*lentokonee-lla.* plane-ADE		
4.3		*Halua-isi-n* Want-COND-1SG		*Saksa-an ja myös Lappi-in ja Tamperee-lle.* Germany-ILL and also Lapland-ILL and Tampere-ALL		
4.4		*Mih-in halua-isi-t* Where-ILL want-COND-2SG	*matkusta-a?* travel-INF			
5.1		*Halua-isi-n* Want-COND-1SG	**matkakust-a* *travel-INF	**venäjä-än, ja Suome-ssa Lappi-in, Hankasalme-lle, *Oulu ja *Helsingi-in.* *Russia-ILL, and Finland-INE Lapland-ILL, Hankasalmi-ALL, *Oulu and *Helsinki-ILL		
6.1		*Halua-isi-n,* Want-COND-1SG	*sano-a,* say-INF,			*e-n tule syntymäpäivä.* NEG-1SG come birthday
7.1	*Eli puhu-vat äiti ja isä paljon kiel-i-ä* So speak-3PL mother and father lots language-PL-PAR *ja Marja halua-isi* and Marja want-COND(3SG)		*oppi-a* learn-INF	*englanni-n *kieli.* English-GEN *language		
7.2	*Menee *kaupa-an ja haluaa* Go(3SG) *shop-ILL and want(3SG)		**osa-ta* *know-INF	*jäätelö-t.* ice.cream-PL		
9.1		*Halua-isi-n* Want-COND-1SG		*marjo-j-a* berry-PL-PAR		*mutta *tarvitse ol-la* but *need be-INF **hyvä-ä ilma.* *good-PAR weather
9.2		*Halua-n myös* Want-1SG also	*kirjoitta-a* write-INF	*blogi-ssa,* blog-INE,		*koska mä e-n *ole-n* because I NEG-1SG *be-1SG **kirjoit-tut viime viiko-lla.* *write-PPC last week-ADE
11.1		*Halua-isi-n* Want-COND-1SG	*men-nä* go-INF	**Suomii-in* *Finland-ILL		*kun mul-la o-n lapse-t.* when I-ADE be-3SG child-PL
11.2	*Ole-n *käy-n *Tampere-llä, *Helsingi-ssa,* Be-1SG *visit-PPC *Tampere-ADE, *Helsinki-INE, *Kuopio-ssa, ja Petäjävede-llä,* Kuopio-INE and Petäjävesi-ADE, *mutta halua-isi-n* but want-COND-1SG			**paljon *kaupungi-t *muu-ta.* *lots*city-PL *other-PAR		

11.3		*Halua-si-n* Want-COND-1SG			**kulma* *cold	*mutta se o-n *kylma* but it be-3SG *cold *Saksa-ssa, Islanni-ssa,* Germany-INE, Iceland-INE, *mutta ei Suome-ssa.* but NEG(3SG) Finland-INE
11.4		*Halua-isi-n* Want-COND-1SG	**katso-a* *watch-INF	**hirvi.* *elk		
11.5	*Ystävä-t Saksa-ssa *ova-i-t Suome-ssa viime* Friend-PL Germany-INE *be-PST-3PL Finland-INE last *viiko-lla* week-ADE *halua-isi-vat* want-COND-3PL		** katso-a* *watch-INF	*revontule-t myös.* northern.light-PL also		
14.1		*Joo halua-n* Yes want-1SG	**loppu-a.* *finish-INF			
14.2		*Joo, halua-n* Yes, want-1SG	*men-nä* go-INF *ja käy-dä* and visit-INF	**Lapi-in* *Lapland-ILL *Lapi-ssa.* Lapland-INE		
15.1		*Ei, mä halus-i-n* No, I want-PST-1SG	*kirjoitta-a* write-INF	**teksti* *text		*mutta mä e-n *voin-nut* but I NEG-1SG *can-PPC *kirjoitta-a koska minu-lla* write-INF because I-ADE *ei *ol-i* NEG(3SG) *be-PST(3SG) **hyvä-ä*ideo-j-a.* *good-PAR *idea-PL-PAR
17.1		*Mutta halua-isi-n* But want-COND-1SG	*oppi-a* learn-INF	**ennemään suome-n* *more Finland-GEN *sano-j-a ja *kielioppi* word-PL-PAR and *grammar		*ennen mene-n Saksa-an* before go-1SG Germany-ILL *kesä-llä.* summer-ADE
19.1	*Tiedä-n, että se o-n liian paljon *tuntei-j-a* Know-1SG, that it be-3SG too much *lesson-PL-PAR *minä e-n *o-n tää-llä,* I NEG-1SG *be-3SG here, *mutta halua-isi-n* but want-COND-1SG		*teh-dä* do-INF	**kurssi vielä.* *course still		
22.1	*Se o-n keittiö, joo, e-n halua.* It be-3SG kitchen, yes, NEG-1SG want					

23.1	*Mu-lla ol-i syntymäpäivä toinen *kesäku-ssa* I-ADE be-PST(3SG) birthday second *June-INE *ja halua-n* and want-1SG		*juhli-a* celebrate-INF	*ensi viikonloppu-na.* next weekend-ESS	
24.1	*Opiskelu o-n myös tosi tärkeä-ä,* Studying is-3SG also very important-PAR *koska halua-n* because want-1SG		*opp-ia* learn-INF *aloitta-a* begin-INF	*paljon ja* lots and **työ soon@s.* *work soon@s	
24.2		*Halua-n* Want-1SG	**vaihtu-a* *change-INF	*jotain *saksas koulu-ssa.* something *German school-INE	
24.3		*Halua-n* Want-1SG	*autta-a* help-INF	**las-ta.* *child-PAR	
26.1		*Mutta halua-n* But want-1SG	*yrittä-ä* try-INF	*hiihto-a.* skiing-PAR	
26.2	*Koto-na,* Home-ESS,	*koska e-n halua* because NEG-1SG want	*kävel-lä* walk-INF	**yliopisto-on.* *university-ILL	
26.3		*Milloin *halua-isi-t-ko* When *want-COND-2SG-Q	*tul-la?* come-INF		
28.1		*Mutta hän halua-a* But she want-3SG	*kerto-a* tell-INF	*jotakin,* something	*mutta hän o-n yksin.* but she be-3SG alone
30.1		*Mutta mä halus-i-n* But I want-PST-1SG *halua-a* want-3SG	*men-nä nukku-ma-an* go-INF sleep-3.INF-ILL *men-nä *nukku-a* go-INF *sleep-INF	**mökki-ssä,* *cottage-INE, *keskusta-ssa ja Airbnb.* *center-INE and Airbnb	*mutta he kaikki* but they all
30.2		**Neljä-n päivä-nä* *Four-GEN day-ESS *me halua-mme* we want-1PL	*men-nä* go-INF *katso-ma-an* watch-3.INF-ILL	*Kemi-in ja* Kemi-ILL and **lumilinna.* *snow.castle	
30.3	*Luule-n, että se ol-i kakssata-a* Think-1SG, that it be-PST two.hundred-PAR *ja neljäkymmen-tä ja yks,* and forty-PAR and one, *koska mä halua-n* because I want-1SG			*insurance@s.* insurance@s	
30.4	*Mutta ennen kuin messu alko-i,* But before that fair begin-PST, *mä en halun-nut.* I NEG-1SG want-PPC				
34.1		*Mutta mä halua-n* But I want-1SG	*puhu-a* speak-INF	*islanti-a.* Icelandic-PAR	

34.2		*Joo, mutta e-n halua* Yes, but NEG-1SG want	*unohta-a* forget-INF	*suome-a.* Finnish-PAR	
34.3		*Ja mä halua-n ehkä* And I want-1SG maybe	*men-nä* go-INF	*suomi-kurssi-lle.* Finnish.course-ILL	
35.1	*Sitten, mun isoäiti ja isoisä tule-vat* Then, my grandmother and grandfather come-3PL *Suome-en ja *matke-taan kaksi *viiko-a* Finland-ILL and *travel-PASS two *week-PAR *Suome-ssa koska he *halu-vat* Finland-INE because they *want-3PL *ja mä halua-n myös* and I want-1SG also		**tie-dä* *know-INF *näh-dä* see-INF	*uus-ia paikko-ja* new-PL-PAR place-PL-PAR *Suome-ssa.* Finland-INE	*missä mä *o-n ol-lut* where I *be-1SG be-PPC
35.2		*Mä halus-i-n* I want-PST-1SG *jo *pitkä *aika* already *long *time	*men-nä* go-INF	**to-hon.* *there-ILL	
36.1		*En *halus-i-n.* NEG-1SG *want-PST-1SG.			
36.2		*Joo en halun-nut,* Yes NEG-1SG want-PPC			*mutta mä katso-i-n.* but I watch-PST-1SG

* The form used by Lena (*hailloiani matkesta*)is inaccurate but the contextual factors as well as morphological and phonological features of the phrase reveal the intended meaning.

Appendix 2. Development of the *tykätä* 'like' construction.

phrase	main clause	tykätä, like	NP	NFC, verb	NFC, NP	main clause
3.1		**Tykkaa-n* *Like-1SG	**matkeska-st, *sanoa-st, *oota-st, *syöda-stja *juoma-st.* *travelling-ELA, *saying-ELA, *unclear-ELA, *eating-ELA and *drinking-ELA			
3.2		**Ei *tykka* *NEG(3SG) *like intended meaning: *E-n tykkää* NEG-1SG like	**kahvi-a-st ja *sauna-st.* *coffee-PAR-ELA and *sauna-ELA			
4.1		*Tykkää-t-kö* Like-2SG-Q	**liha?* *meat			
4.2		*Tykkää-t-kö* Like-2SG-Q	*pitsa-sta?* pizza-ELA			
4.3		*Tykkää-n* Like-1SG	*tomaati-sta.* tomato-ELA			
4.4		*Tykkää-n* Like-1SG	**kasvi-sta.* *plant-ELA			
4.5		*E-n *tykkää-n* NEG-1SG *like-1SG	**musika-sta.* *music-ELA			
4.6		*E-n tykkää.* NEG-1SG like				
4.7		*<e-n tykkää>* <NEG-1SG like> *[//] e-n *tykkää-t* [//] NEG-1SG *like-2SG	**lahe-sta, kala-sta, *kurkku-sta.* *salmon-ELA, fish-ELA, *cucumber-ELA			
5.1		*Tykkää-n* Like-1SG		*laitta-a* make-INF *syö-dä ja leipo-a.* eat-INF and bake-INF	*ruoka-a* food-PAR	
6.1		*Hän tykkää* He like(3SG)	**kahvi.* *coffee			
8.1		*Tykkää-n* Like-1SG		*laitta-a* make-INF *ja matkusta-a.* and travel-INF	*ruoka-a* food-PAR	
9.1		**Tykkä-n* *Like-1SG		*laula-a* sing-INF	*kuoro-ssa.* choir-INE	
9.2		*Tykkää-n* Like-1SG		*kuunne-lla* listen-INF	**life-musiikki.* *live-music	
10.1		*Mä tykkää-n* I like-1SG		**laihta-a* *make-INF *matkusta-a, neulo-a ja luke-a.* travel-INF, knit-INF and read-INF	*ruoka-a,* food-PAR,	

10.2		*Tykkää-n* Like-1SG		*to pick@s* to pick@s *ja sitten laihta-a* and then make-INF	*marjo-j-a* berry-PL-PAR *ruoka-a marjo-j-a.* food-PAR berry-PL-PAR	
10.3		*Sä tykkää-t* You like-2SG	**tee-tä?* *tea-PAR			
10.4		*Tykkää-t-kö* Like-2SG-Q	**Katriina?* *Katriina			
10.5		*Ja tykkää-n myös* And like-1SG also		*oppi-a* learn-INF	*kiel-i-ä.* language-PL-PAR	
10.6		*Ja tykkää-n myös* And like-1SG also		*men-nä *shoppaile-ma-ssa* go-INF shopping-3.INF-INE *ja kirjoitta-a* and write-INF	 **bloggi-ssa.* *blog-INE	
10.7		**Mi-tä sä tykkää-t?* *What-PAR you like-2SG				
14.1		*Mutta tykkää-n* But like-1SG		*katso-a* watch-INF	*elokuva.* movie	
14.2		*Mutta *jota mä tykkää-n* But *that I like-1SG	**kuuma *sää,* *hot *weather,			*matkusta-n aina *skandinaavia-an.* travel-1SG always *Scandinavia-ILL
21.1		*Mä tykkä-si-n* I like-PST-1SG	**kaikki ruua-sta.* *all food-ELA			
22.1	*Tul-i-n Suome-en,* Come-PST-1SG Finland-ILL *koska tykkää-n.* because like-1SG					
34.1	*Mutta mun miele-stä se o-n tosi hyvä ol-la *matka-ma-ssa,* But my opinion-ELA it be-3SG very good be-INF *travelling-3.INF-INE, *koska mä tykkää-n* because I like-1SG			 *ol-la* be-INF	 **juna-lla ja lentokentä-llä.* *train-ADE and airport-ADE	
34.2		*Joo mutta mä tykkää-n* Yes but I like-1SG		*ol-la* be-INF		
34.3		*Mä tykkään* I like-1SG	**tä-n.* *this-GEN			

Appendix 3. Glossing.

ADE adessive (‘at, on’)

ALL allative (‘to’)

COND conditional

ELA elative (‘out of’)

ESS essive (‘as’)

GEN genitive (possession)

ILL illative (‘into’)

INE inessive (‘in’)

INF infinitive

NEG negation (an auxiliary verb in Finnish)

PAR partitive (partitiveness)

PL plural

PST past tense

PPC past participle

Q interrogative

SG singular

1 1st person ending

2 2nd person ending

3 3rd person ending

3.INF 3rd infinitive (ma infinitive)

Appendix 4. Tasks used in data collection.

week	Type of data	Task	expressions of evaluation per 100 words
1	w	Write about yourself	0
2	s, dialogue	Interview your partner and tell about yourself	0
3	w	Introduction to your blog (write about yourself)	5.56
4	s, dialogue	Talk with your partner. Pictures of various kinds used as inspiration.	6.07
5	w	Write about yourself.	5.06
6	s, monologue	Look at the cartoon strip and talk about Martti's day.	1.41
7	w	Write a story of a person in a picture.	6.36
8	s, monologue	Describe yourself to your partner.	1.59
9	w	What are you going to do this week?	2.56
10	s, dialogue	Talk about Jyväskylä with your partner.	3.92
11	w	Write a text about Finland.	8.48
12	s, monologue	Look at the cartoon strip and talk about Martti's day.	0.53
13	w	What did you do last weekend?	4.20
14	s, dialogue	Which one do you prefer …? Various pairs: car or train, holiday in Lapland or in a warm place, laptop or iPad.	4.49
15	w	What did you do whenever (last week, last weekend, last summer)?	3.85
16	s, group conversation	Which one do you prefer …? Various pairs: car or train, holiday in Lapland or in a warm place, laptop or iPad.	0.64

17	w	Write an email to your teacher.	1.79
18	s, dialogue	How was your autumn term in Finland?	3.25
19	w	Write an email to your teacher.	1.75
20	s, dialogue	Tell us about people in the pictures.	1.67
21	w	What did you do in the Christmas holiday?	4.46
22	s, dialogue	How was your holiday?	3.35
23	w	Write an invitation to your birthday party.	6.59
24*	s, monologue	What is important for you in your life?	8.57
25	w	You wake up because you hear some awful noise, what do you do?	2.59
26	s, dialogue	Reaction exercises. Questions Lena was asked: Could I borrow your bike? Do you have a skiing holiday?	2.52
27*	w	What do you do if you are tired or depressed?	6.58
28	s, monologue	Look at the cartoon strip and talk about Martti's day.	0.49
29	w	What is different between Finland and your home country?	0.72
30	s, dialogue	Talk about your 'a trip in Finland' project	4.18
31	-	-	-
32	s, group conversation	Talk about your home city.	0.34
33	w	What did you do in the Easter holiday?	0.56
34	s, dialogue	What would you do if you had 5000 euros?	3.59
35	w	What are you going to do next summer?	2.82
36	s, dialogue	Reflect on your Finnish learning	4.13

* possibly a stronger task effect

Appendix 5. Normalized frequencies of the most frequent constructions in written and spoken data in frequency order.

Written data	construction	Frequency	Spoken data	construction	frequency
	haluta	14.10		haluta	10.51
	hyvä	13.80		tykätä	10.33
	tykätä	5.59		hyvä	9.73
	pitää*	4.80		tärkeä**	4.76
	hauska	4.15		hauska	1.52
	rakastaa	3.06		kiva	1.44
	lempi	2.43		lempi	1.30
	ärsyttää	2.18		vaikea	1.22
	vaikea	1.56		hyvin	1.02

*pitää ‘like$_2$’ is preferred in the written register

**tärkeä is among the most frequent constructions in the spoken data mainly because of one speaking task in week 24, ‘What is important for you in your life?’

2

Dynamic Usage-Based Principles in the Development of L2 Finnish Evaluative Constructions

by

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Dynamic Usage-Based Principles in the Development of L2 Finnish Evaluative Constructions

Abstract

This study investigates the formal verbalizations of evaluation used by four beginning L2 learners of Finnish from a dynamic usage-based perspective. Longitudinal data collected weekly were used to investigate what kind of constructions learners use to express evaluation and how these interact and develop over time. The results show that when a new construction is acquired in the L2, another related construction might regress. The results also point to increased variability in the construction during a phase of rapid development and reduced variability in the phases of regression or slower progress. These findings add to our understanding of a developing L2 as a system in which changes in one aspect have the potential to bring about changes in interconnected aspects. The variability patterns found in the learners' developmental trajectories add to the growing body of research that proposes variability as meaningful in the learning process.

Introduction

In recent years, researchers have increasingly come to view language development as a complex and dynamic process (see e.g. Larsen-Freeman and Cameron 2008; van Geert 2008; Author). To get more insight into the actual developmental process, several longitudinal case studies have focused on non-linear L2 developmental patterns: variation among learners, the variability in developmental measures, and changing interaction between subsystems in the learner's language. For example, it has been shown that developing complexity is a necessary precursor for accuracy in L2 English (Caspi 2010). Moreover, a competitive relationship between developing vocabulary and syntax has been found in L2 English learning (Author). So far, studies within this framework have focused exclusively on the linguistic forms that were produced by tracing the development of the common complexity, accuracy and fluency (CAF) measures. No attention has been paid to the other side of the coin: how do language learners, with their limited linguistic repertoire, manage to convey a certain meaning and how do the various linguistic means interact over time? The current study aims to fill this gap by taking meaning as the starting point.

This study will focus on how four beginning learners of L2 Finnish express evaluation, i.e., that something is good or bad, desirable or non-desirable in their opinion, and investigate how different types of linguistic constructions expressing this notion develop and interact with each other over time. In an earlier single case study (Author), we found that an L2 learner used two main types of constructions to express evaluation, namely verbal (e.g. *Minä tykkäsin *kaikki ruoasta* 'I liked all the food') and adjectival (e.g. **kasvastudeiden on tosi hyvä* 'the education (science) is very good') constructions. As in previous Complex Dynamic Systems Theory (CDST) studies focusing on linguistic forms, we found a clear non-linear development with two constructions competing in the early stages: initially, the learner used verbal constructions almost exclusively, which developed at the expense of adjectival constructions. Later, when

adjectival constructions were used more frequently, the frequency of verbal constructions leveled off.

The aim of the current paper is to examine to what extent such dynamic patterns can be found in other learners with different L1s in the same learning context. The paper is organized as follows. After presenting a theoretical framework of dynamic, usage-based linguistics, we will review previous work on the interaction of different aspects in the developing L2 and in intra-individual variability in L2 development. The empirical study itself looks at the quantitative development of evaluative constructions in four beginner learners of Finnish.

L2 Development from a Dynamic Usage-Based Perspective

In the context of CDST and usage-based (UB) linguistics – a dynamic usage-based (DUB) perspective for short – it is assumed that usage events, i.e., the use of language in particular contexts, drive L2 development and that the emergent grammar of the L2 evolves in discourse (Eskildsen 2009; Langacker 2009). A learner's language therefore changes every time the learner uses the language in social interaction. During the changes the learner's language undergoes over time, the learner might move towards more effective ways of using the L2: the learner is progressing. Sometimes the changes might temporarily lead to less effective communication strategies and a regression. Both progress and regress result in variability and both can be seen as development (Larsen-Freeman 2013).

Several studies have shown that developmental trajectories in L2 learning can be quite different from one individual to another (Author). Even identical twins, whose exposure to the target language is very similar, may show clear differences in their L2 learning trajectories (Author). Also the 22 L2 English learners in the same learning context traced over one academic year by Author had vastly different developmental paths in terms of lexical and syntactic complexity. As the authors point out, "no two individuals will develop in exactly the same manner as development takes place in a non-linear fashion, with phases of high degrees of variability accompanying rapid development" (Author). Regardless of the highly individual learning trajectories, these two developmental principles mentioned by Author, namely the non-linearity of development (the alternation of progress and regress) and the increased variability when progress is taking place, could possibly be generalized to a bigger learner group.

In a DUB approach, the non-linear development in L2 learning is assumed to be based on the self-organization of the different subsystems of the L2. Different subsystems of the L2, such as lexicon, phonology, and syntax (see de Bot and Larsen-Freeman 2011) or complexity, accuracy, and fluency (see Housen, Kuiken and Vedder 2012) interact with each other continuously. These subsystems also interact with the learner's internal resources (e.g. motivation, aptitude, attention) and external resources (the target language environment) (de Bot and Larsen-Freeman 2011). A change in one subsystem has the potential to affect other aspects and hence the whole system, and non-linear changes emerge from these interactions. The various subsystems may develop rather independently before they self-organize and become coordinated. The different subsystems of the L2 may therefore exhibit various kinds of interactions, and these may change over time as development takes place (van Geert 2008). The

first type of interaction is a conditional relationship in which one subsystem has to reach a certain minimal level before another subsystem can develop. In L2 English (Caspi 2010) and L2 Finnish (Author), in writing, the complexity of certain linguistic features has been shown to develop before accuracy. The second type of interaction is a competitive relationship. This means that different subsystems may compete for the same resources, and progress in one subsystem may happen at the expense of another. For example, Author found that an advanced learner of English focused in writing alternately on vocabulary and syntactic complexity as they showed a strong trend towards a competitive relationship between Type Token Ratio and average sentence length. In the third type of interaction – a supportive relationship – the different subsystems are more coordinated and develop together, supporting each other's growth. For example, Author found that in writing, two complexity measures at different levels of granularity – the number of words per finite verb, a general complexity measure, and NP length, a more specific measure – correlated positively, supporting the idea that these measures were connected growers. However, as L2 development is a dynamic process, the interaction between the different subsystems may be asymmetrical, meaning that the conditional, competitive or supportive relationships between them may also change over time (see Author).

Variability refers to changes in a variable (subsystem) within an individual over multiple measuring points (van Geert and van Dijk 2002). Thelen and Smith (1994) argued that in periods of rapid development, a subsystem might exhibit more variability than in periods of slower progress. The larger degree of variability in behavior is related to the learner's attempts to perform a task: when the learner is trying out different, old and new, ways of accomplishing the task, this results in increased variability. In line with Thelen and Smith (1994), Ellis (1994) found that in L2 learning, variability occurs more in the early stages of development than in the later stages. In the development of L2 Finnish, it has been found that case errors showed more variability in the earlier stages but that the accuracy ratios stabilized as the learner developed (Author; Tilma 2014). However, higher degrees of variability occur not only in the early stages of L1 and L2 development but also at more advanced stages, when the learner is trying out different linguistic means to convey a certain meaning (Author).

According to dynamic systems theorists such as Thelen and Smith (1994), variability is a prerequisite for development and it is related to progress. Author found that in L2 development, the twin with the highest degree of variability progressed more than her sister. In the multiple case study with 22 L2 English learners, there was a strong correlation between the degree of variability in holistic scores and proficiency gains (Author). For progress to take place, it is necessary for the learner to try out and possibly even overuse certain linguistic features (Author). When there is regression in learner language, or when no change is taking place, variability is lower.

To summarize, DUB studies so far have shown that each learner has his or her own L2 developmental trajectory and that these trajectories are individually owned. L2 learners seem to have little in common except for some very general patterns, which may hold for most but not all learners. The question raised in this study is whether these kinds of patterns, more specifically a non-linear development of subsystems, changing interactions between

subsystems, and increased variability in periods of progress, can be found in Finnish learners who try to express the concept of evaluation. In other words, the main goal of the current study is to explore whether there are similarities in the learners' trajectories when - contrary to many previous studies - the analysis is started from the meanings that the learners convey, i.e. when an onomasiological approach is adopted.

The Current Study

Taking an onomasiological approach – i.e. searching for the formal verbalizations of a given concept (see Grzega 2012; Fernández-Domínguez 2019) – the current study aims to capture the changes the developing L2 system undergoes as the learner uses the language for the purposes of social interaction. The current study will trace the development of different types of evaluative constructions in four beginner learners of Finnish.

Our research questions are as follows:

1) What types of constructions do the learners use to express evaluation and what types of interaction can be observed between these constructions?
2) What kinds of patterns of variability can be observed in the use of the different types of evaluative constructions?

Based on our earlier study (Author), we hypothesize that

H1: The learners will use mainly two constructions (verbal and adjectival) to express evaluations and these constructions have a competitive relationship.

If there is a competitive relationship between the construction types, we should see that when one construction type is being explored and therefore used more frequently, both the token and type frequency of the other construction type will decrease. If the hypothesis about a competitive relationship is not supported, we should find a more or less equal distribution of construction types throughout the period of observation.

H2: When one construction type is being explored, this construction will show more variability compared to the other type.

If this hypothesis is supported, we should see that a construction type that is being explored and thus used more frequently shows a higher variance in token frequency than the other construction type. If the hypothesis is not supported, the variances of both types should be more or less at the same level throughout the period of observation.

Method

Participants

This study traces the language development of four adult Finnish L2 learners who were then attending the same language courses at a university in Finland. The background information on the participants is presented in Table 1.

Table 1
Background information on the participants

Participant	Age	L1	Other languages	Time of residence before the study	Explicit instruction before the study
Lena	23	German	English[1] [2], French[1], Icelandic[1] [2]	0	0
Jungo	22	Chinese (Hunanese)	Mandarin Chinese[1], English[1]	2 years	1 Finnish course of 5 ETCS, 20 hours self studying
Alvaro	30	Spanish	English[1], French[1] [2], Russian[1]	0	0
Khadiza	31	Bangla	English[1], Hindi, Urdu	4 years	0

[1] Learned in instructional setting. [2] Learned in target-language-speaking community.

To ensure that these four learners' data were comparable in terms of Finnish language proficiency at the beginning of the study, three experienced raters who were L1 speakers of Finnish evaluated the learners' first three written texts. The length of these texts ranged between 39 and 167 words (average 93 words). The criteria of the Finnish National Certificates of Language Proficiency testing system were used (University of Jyväskylä, Center for Applied Language Studies and the Finnish National Agency for Education; scale from 1 to 6, 1 being the lowest and 6 the highest level, corresponding the levels A1-C2 in the European Framework of Reference for Languages (Common European Framework of Reference for Languages, Council of Europe, 2001)). For the first written text (see Table 2, Text 1), the median of ratings for Khadiza and Jungo was higher than for Lena and Alvaro. However, in week 5 (see Table 2, Text 3), Lena and Alvaro had caught up with Khadiza and Jungo: the median of the ratings for the third written text was higher for Lena and Alvaro than it was for Khadiza and Jungo. In other words, the initial differences in participants' language proficiency leveled out during the first five weeks of the study. The range and the median of the three ratings for the first three written texts for every participant are shown in Table 2.

Table 2
Participants' L2 writing proficiency at the beginning of the study

	Text 1		Text 2		Text 3		Texts 1-3 together	
	Range	Median	Range	Median	Range	Median	Range	Median
Lena	1	1	1	1	2–3	3	1–3	1
Jungo	1–2	2	1–2	2	2–3	2	1–3	2
Alvaro	1	1	1–2	1	2–3	3	1–3	1
Khadiza	1–2	2	1–2	2	2–3	2	1–3	2

All the participants took the same three Finnish courses during the study. The three courses were at the levels A1, A2 and B1 in the European Framework of Reference for Languages (Common European Framework of Reference for Languages, Council of Europe, 2001) (see Figure 1 for the timing of the courses). Each course consisted of 70 contact hours and additional independent work; each one was worth 5 ECTS. All three courses were taught by an L1 speaker of Finnish, the first two courses by the first author and the third one by a colleague.

The three courses aimed to develop learners' skills in four different functions: social interaction, telling and describing, understanding and searching for information, and developing as a language learner. While evaluative constructions (that something is good or bad, desirable or non-desirable) were not the explicit focus of the course, they were taught and practiced during the courses on some occasions as part of the 'Telling and describing' learning goal. The timing of the explicit instruction on these constructions is given in Figure 1. The exercises are shown in Supplementary File 1. In total, evaluative constructions were taught in 15 of the 36 weeks of the data collection. In all of these 15 weeks, except in weeks 24 and 34, both verbal and adjectival constructions were presented or used during the activities. A more detailed table showing the constructions used in each week is presented in Supplementary File 2.

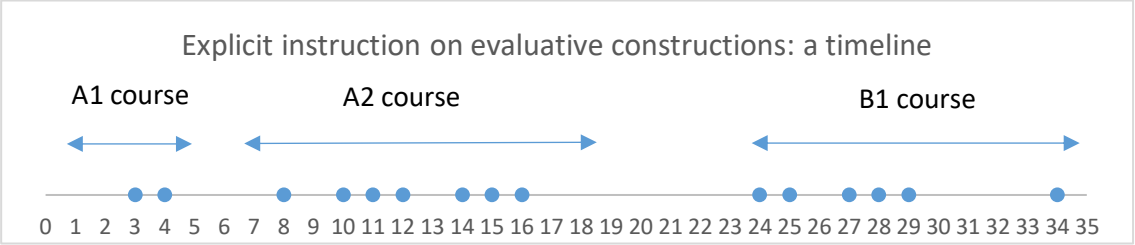

Figure 1 The timing of explicit instruction on expressing evaluation during the study.

Data collection

The data were collected weekly over a period of nine months, with written and spoken data alternating. The number of data points is shown in Table 3.

Table 3
Number of data points

	number of data points	written data points	spoken data points
Lena	35	17	18
Jungo	35	18	17
Alvaro	33	16	17
Khadiza	28	16	12

The data are free response data: the participants were asked to write or talk about a certain topic. The tasks include topics like "Write about yourself", "Write an invitation to your birthday party" and "What are you going to do next summer?". All the topics are listed in Supplementary File 3. The topics were selected in accordance with course contents and the participants' language proficiency levels so they were familiar to the participants. However, they were not practiced in the classroom.

The written data are handwritten. In the first half of the study, the data were collected during the contact lessons of the Finnish course and there was a time limit of approximately 20 minutes. In the second half, the data were collected in the participants' free time and there was no time limit. The length of the writing samples is on average 91 words (range: 31–152 words).

The spoken data were recorded in a language studio, with a recorder (Roland R-05) and once with a smart phone. The spoken data consist of both monologues and dialogues. The other person in a dialogue was either another L2 speaker from the classroom or an L1 speaker of Finnish (mostly the first author of the paper, twice another Finnish instructor or a research assistant). The length of the speaking samples is on average 218 words (range: 44 – 518 words).

Data selection

The data were first transcribed in Word. CHAT format (MacWhinney 2000) was followed to the extent necessary for the analysis of this study (e.g. overlaps were not transcribed). After that, the first writer of the paper scrutinized the data for all the constructions expressing evaluation. In this study, the evaluative language is defined in line with Alba-Juez and Thompson (2014: 13) who define evaluation as

> a dynamical subsystem of language, permeating all linguistic levels and involving the expression of the speaker's or writer's attitude or stance towards, viewpoint on, or feelings about the entities and propositions the s/he is talking about(.)

In line with CDST assumptions, Alba-Juez and Thompson (2014) point out that evaluative language can be seen as a subsystem of language. All constructions expressing evaluation are part of this subsystem, which can be further divided into smaller subsystems, like different construction types expressing evaluation (see section Data categorization). Linguistic levels that evaluative language permeates are the phonological, the morphological, the lexical, the syntactic, and the semantic level (Alba-Juez & Thompson 2014: 10–11). Alba-Juez and

Thompson (2014: 10) point out that the lexical level is "the most evident level" of evaluative language when words with "evaluative load" such as *good* or *bad*, are used. Evaluations at this level were also most evident and frequent in the data of this study (see section Data categorization). In the corpus of this study, expressions of evaluation include expressions like:

Mut se oli kiva 'But it was nice' (attitude or stance towards/view point on entity)
Tykkään Pink Floydista 'I like Pink Floyd' (attitude or stance towards/view point on entity)
Mua ärsyttää kaikki 'I'm annoyed by everything' (feeling about entity)
*He ovat *tärkeä mun elämässä* 'They are important in my life' (attitude or stance towards/view point on entity)
**Siita minua piristää* 'That cheers me up' (feeling about entity)
*Ajattelen mun mielestä se on hyvä *idia* 'I think it's a good idea' (attitude or stance towards/view point on proposition)

In the current study, interrogative expressions like *Tykkäätkö pitsasta?* 'Do you like pizza?' are included in the analysis. Simple yes/no statements are excluded.

In data selection, an onomasiological approach (see Grzega 2012; Fernández-Domínguez 2019) was used. The term onomasiology refers to a process proceeding from notion to name, while the opposite process, semasiology, goes from name to notion (Malmkjær 1991: 291). The onomasiological approach searches for the linguistic means that are used to express a certain notion (Grzega 2012). Using the above mentioned definition of evaluation, the first author selected all evaluative utterances based on the meaning of every utterance within its context. When using the onomasiological approach, an essential point is that the selection is based only on the meaning of the construction, not on its form. Later on, in the process of data categorization, the form of the expressions was also paid attention to (see section Data categorization). The onomasiological approach emphasizes meaning making as a central function of language (Fernández-Domínguez 2019) and by using it, we can get a better idea of the learners' communicative needs compared to a more traditional analysis that starts with linguistic form. Moreover, when no strict requirements for the form of the targeted construction are set, also unconventional and non-target-like learner language constructions are included in the analysis (e.g. **ei* (NEG) + adjective, **Mä tunnen että Suomi on parempi* 'I feel that Finland is better', or **Sitten minulla on hyvin nukkuminen* 'Then I have well sleeping').

Because also the unconventional, non-target-like learner language construction wanted to be included into our analysis, in the current study, Goldberg's (2006) definition of a construction - a conventionalized pairing of form and function - has been broadened somewhat to include the L2 learners' emergent form-meaning mappings, which might not yet seem conventional from the point of view of proficient language users. Because of these special characteristics of learner language constructions – unconventionality and impermanence – the definition of learner language construction given by Waara (2004: 53) has been adopted in this study:

> A learner construction is a construction, i.e., a meaning and syntax correspondence, but which is used in a slightly unconventional manner. Although usage does not result in a communication breakdown between participants, it deviates in some way.

Examples 1 and 2 show how meaning and syntax correspondence, i.e. the link between the semantic and the phonological pole might be expressed with a conventional and an unconventional construction (see Appendix 1 for the glossing). If the inaccuracies in the learner language constructions are small enough, the link between form and function remains clear and therefore the expressions are understandable and the communication does not break down.

(1)	*Minä*	*pidä-n*	*enemmän*	*talve-sta*
	I	like-1SG	more	winter-ELAT
	I like winter more			

(2)	*Minä*	*pidä-n*	*enemmän*	**talvi*
	I	like-1SG	more	*winter
	I like winter more			

In the previous single case study (Authors), all of Lena's evaluative constructions in written tasks, presented in their original context, were given to a panel of three proficient speakers of Finnish, who judged whether the utterances expressed evaluation or not. Based on Lena's data, the first author scrutinized the data of the other three participants. In the case of a few problematic expressions, the Finnish-speaking panel was consulted. In total, 859 expressions of evaluation were included in the final analysis (see Table 4 for the normalized frequencies).

As pointed out by Alba-Juez and Thompson (2014), evaluation can be expressed at the lexical level by using words with "an evaluative load" (Alba-Juez & Thompson 2014: 10). When the expressions of evaluation used by the participants of this study were explored, it turned out that almost all of them include a word with an evaluative load (e.g. *tykätä* 'like', *rakastaa* 'love', *hyvä* 'good', and *tärkeä* 'important'). In a very few expressions, the evaluative word could not be identified, like in Lena's expression *Joo, se on Suomessa … ei lunta, ei aurinko, ei nukkuma* 'Yep, that's Finland …no snow, no sun, no sleeping'. In this expression, (pragmatic) evaluation is covert and can be interpreted with the help of the context: in November, Lena expressed negative attitude towards Finland because it had been so dark lately and she had been feeling tired. In this kind of expressions, the speaker and the hearer have to share some knowledge, otherwise, the evaluative meaning may be lost (see Alba-Juez & Thompson 2014).

Data categorization

As pointed out earlier, in virtually all evaluative expressions, the evaluative word could be identified and these expressions were categorized according to the main evaluative element of the construction, i.e. the word that classes the construction as evaluative. As was the case in our earlier single-case study, it turned out that there were two main types of constructions in the data: verbal and adjectival/adverbial[1] constructions. As pointed out by Martin and White (2005: 46), verbs and adjectives express different kinds of evaluations. Verbs describe evaluation as process, like in Example 1, adjectives instead express evaluation as quality, like in Examples 3–5. These two types of constructions are normally mutually exclusive within one utterance; in other words, for any given utterance, they are in formal competition for encoding the evaluation. Because these two types of constructions express evaluation but encode it in a different way, we see them as subsystems of the evaluative language, which can be seen as a subsystem of language (Alba-Juez & Thompson 2014: 13).

In a verbal construction, the evaluative element of the construction is a verb such as *tykätä* 'like$_1$', *haluta* 'want' or *vihata* 'hate'. In our analyses, the construction also encompasses all the complements of that verb (subject, object, and adverbial) and optional qualifiers (see Example 1 above, in which the verb *pitää* 'to like$_2$' forms the core of the construction).

In an adjectival construction, the adjective is the constitutive element in which the speaker expresses his or her evaluation of, or attitude towards something. Adjectives are often used in a comment clause which is a declarative sentence with a copula (VISK § 1212) and an adjective (or an adverb) used predicatively. In our analyses, the adjectival constructions also encompass the subject and the optional qualifiers (see Example 3, in which the core of the construction is the word *hyvä* 'good').

(3)	*ja*	**kasvastudeiden*	*o-n*	*tosi*	*hyvä*
	and	*education (science)	be-3SG	very	good
	'and the education is very good'				

In some sentence types, the adjective is used attributively (see Examples 4 and 5).

(4)	*Häne-llä*	*o-n*	*mielenkiintoinen*	*tarina*
	He-ADE	be-3SG	interesting	story
	'He has an interesting story'			

(5)	*Me*	*sö-i-mme*	*hyvä-ä*	*ruoka-a.*
	We	eat-PST-3PL	good-PAR	food-PAR
	'We ate good food.'			

[1] For the clarity of presentation, the group of adjectival/adverbial constructions will be referred to as adjectival constructions later on in the text

As shown in Example 5, sometimes the verb in the adjectival construction is something other than *olla* 'to be'. This verb is never an evaluative verb, but the evaluative or affective element of these phrases is an adjective or an adverb.

In total, 24 of the 859 expressions of evaluations could not be categorized as verbal or adjectival/adverbial constructions. In some of these expressions, a word with an evaluative load could be identified, i.e. evaluation was expressed at the lexical level, like in the expression *Siellä on edistys, totta kai* 'Of course, there is progress'. In a very few expressions, the evaluative word could not be identified, like in Lena's evaluation on Finland presented earlier in this section. Because these expressions were not used repeatedly, they were not analyzed in more detail. These expressions are shown in Supplementary File 4.

Normalizing the data

Because the texts produced by the participants varied in length, the data were normalized for text length. Both the token and type frequencies of constructions were calculated per 100 words.

Creating one spoken and written corpus

Before creating one corpus of the spoken and written data, the two types of data were compared. The descriptive statistics (mean, standard deviation, and median) are shown in Table 4.

Table 4

Normalized frequencies of evaluative constructions in written and spoken data: mean, standard deviation, and median

	M		SD		Median	
	written	spoken	written	spoken	Written	Spoken
Lena	3.92	2.84	2.39	2.30	4.20	1.92
Jungo	4.68	3.47	3.53	2.33	3.23	2.78
Alvaro	4.66	3.22	2.45	1.36	3.90	3.29
Khadiza	4.87	5.50	2.67	3.38	4.82	4.40

It transpired that the evaluative constructions used in the two modes were similar in frequency. Paired samples t-tests (Lena and Khadiza) and Wilcoxon Signed-ranks tests (Alvaro and Jungo) showed no significant differences between the spoken and written data evaluative constructions frequencies. (Lena: $t(16) = 1.470$, $p=0.161$; Khadiza: $t(11)= -0.586$, $p=0.569$; Alvaro: $Z= -1.603$, $p=0.109$; Jungo: $Z= -1.022$, $p=0.307$). Because these tests require an equal number of data points in both data sets, one data point needed to be removed from each learner's spoken or written data. The mean, standard deviation, and median reported above are based on these data sets. Means for the complete data sets before the removal of one data point each are as follows: Lena spoken data: 2.91, Jungo written data: 4.63, Alvaro spoken data: 3.26, and Khadiza written data: 5.42.

Visualizing interactions among constructions

A DUB analysis always starts with visualizing the raw data in different types of line or bar graphs to observe general trends. Then various ways may be used to detect patterns of interaction. To examine the interaction of verbal and adjectival of constructions longitudinally - as it was found out that all learners used almost exclusively verbal and adjectival constructions to express evaluation (see section Data categorization) - the normalized frequencies were smoothed. The idea of data smoothing is to make trends in the data more clearly recognizable and this is done by decreasing the amount of variability in the data that is plotted in a graph (Gunst & Mason 1980: 39). In the current study, locally estimated scatterplot smoothing (LOESS), which is a type of local regression (see Peltier 2009), was used. This method creates a LOESS curve, which is based on linear regression lines that are calculated for parts of the data by using a moving window (for linear regression, see Gunst & Mason 1908: 6–8). The data points in the center of the window have a bigger effect on the slope of the LOESS curve that the data points at the edges of the window (Harrell 2015: 29).

The smoothed trajectories reveal the interaction patterns more clearly than the raw data and they show that all learners use verbal and adjectival constructions in phases: at times verbal constructions are used more frequently than adjectival constructions and vice versa. Based on these differences in both token and type frequencies of verbal and adjectival constructions, each learner's data were divided into verbal and adjectival phases. The smoothed data also help us to see how the frequencies of the constructions are changing over time within the phases, i.e. whether the frequencies of the two types of constructions are increasing or decreasing over time.

When smoothing the data, different window sizes were used for different learners because of the differences in the number of data points. For Lena, we used a window of 12 data points (alpha=0.343), for Jungo a window of 12 data points (alpha=0.387), for Alvaro a window of 11 data points (alpha=0.333), and for Khadiza a window of 10 data points (alpha=0.400). The value for alpha should be set between 0.25 and 0.50 and tells how many percent of the data points fall within the used window size (e.g. for Lena 12 data points out of 35 corresponds to 34.3 %).

The interaction patterns found in smoothed data were again compared to the raw data, which allow us to see the interaction and the development of frequencies gleaned from the smoothed data in more detail. It is important to note that smoothed trajectories do not have a one-on-one relation with the raw data points.

Calculating and visualizing degrees of variability

We also aimed to investigate the variability patterns in the four learners' data. In this study, the variability is operationalized in terms of variance. Variance measures how much a set of numbers on average deviates from the mean. In the current study, the variance is defined as the average of the squared deviations from the mean, i.e. the squared standard deviation (SD) (van Geert and van Dijk, 2002). Variance is calculated for phases defined on the basis of the raw data. For each learner, the variance of different phases was compared to the variability patterns found using min–max graphs (see Supplementary File 5) and we found that they were in line with each other in virtually all cases. This comparison ensured that the variance does not overestimate the amount of variability even though in some cases the variance might be sensitive to the mean (see van Geert and van Dijk 2002.)

Results

Table 5 shows the normalized frequencies of the different constructions used by each learner. As shown in Table, all four learners used mainly verbal and adjectival constructions to express evaluation and for this reason, only these two types of construction will be analyzed in detail.

First, to get an overall view of the data, we will report both the token and type frequency of the two construction types used by each learner in the course of the 9-month study. After that, we will report on each learner separately. The first learner, Lena, is discussed in great detail to show the line of reasoning (see also Authors 2018). In the discussion we will consider to what extent we may see similar developmental principles in the four learners' trajectories.

Table 5

Normalized frequencies of different constructions expressing evaluations over the whole period of observation.

	Total	Verbal	Adjectival	Other
Lena	118.95	58.22	57.75	2.98
Alvaro	129.90	59.39	69.53	0.98
Khadiza	136.72	69.64	59.79	7.29
Jungo	125.93	65.00	59.75	1.18

Lena

Figure 2 shows Lena's development over time of the two types of constructions. The LOESS-function visualizes the changing interactions between the constructions.

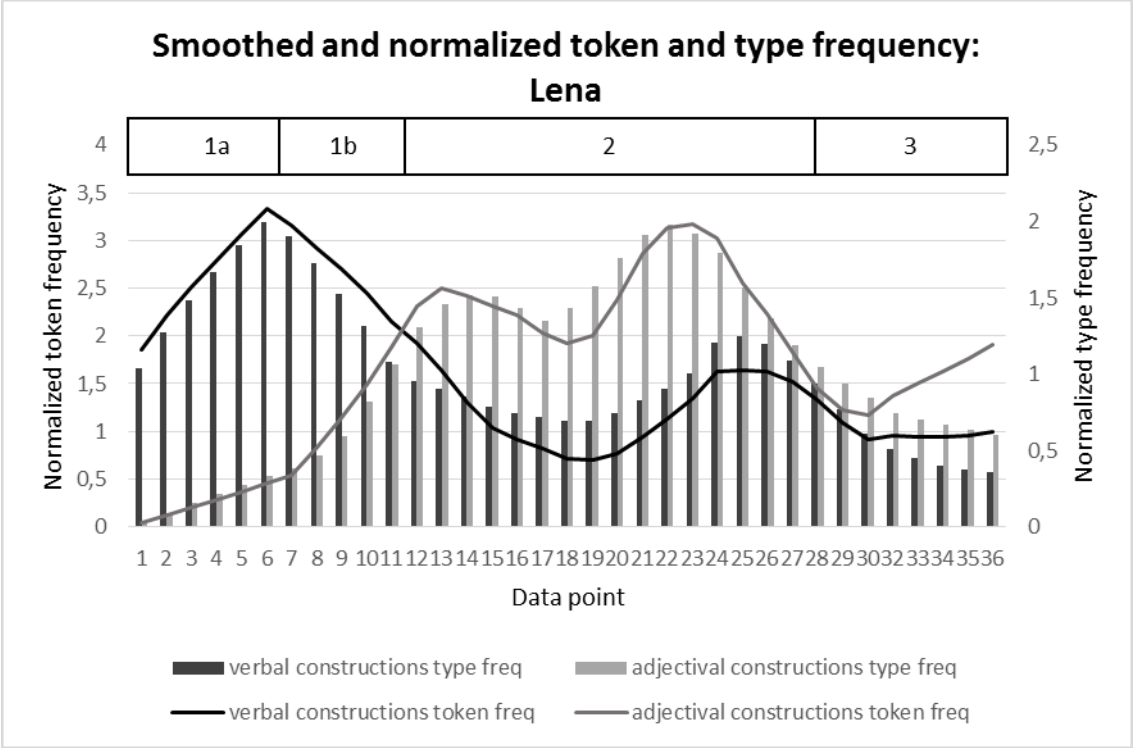

Figure 2 Lena's smoothed normalized token and type frequencies of verbal and adjectival constructions

The LOESS curves show clear phases in the use and interaction of the two construction types. Initially Lena strongly prefers verbal constructions, like *Tykkään tomaatista* 'I like tomato' and *Rakastan *puhuaa Suomea* 'I love to speak Finnish'. This phase roughly spans weeks 1–11 and can be divided into two sub-phases. In sub-phase 1a (weeks 1–6; the phases are indicated by the bar below the title of the graph) the frequencies of both constructions are increasing, but in sub-phase 1b (weeks 7–11), the frequencies of verbal constructions are decreasing while the frequencies of adjectival constructions, like *Jyväskylä on hyvä kaupunki* 'Jyväskylä is a nice city', are increasing. In phase 1b these two types of constructions are, then, in a competitive relationship. After this, the token and type frequency of verbal constructions continues to decrease and in phase 2, around weeks 12–27, adjectival constructions are used more frequently (the token frequency is higher) and with more variability (the type frequency is higher) compared to verbal constructions. In phase 3 (weeks 28–35), the frequencies stabilize at more or less the same level and one type is not used at the expense of the other.

The smoothed trajectories in Figure 2 help us to see the general patterns of interaction between the constructions. Inspection of the raw data allows us to see the interaction and development of frequencies in more detail and to refine the phases set up on the basis of the smoothed data. Table 6 presents the refined phases and the actual numbers of type and token frequencies and the variance in token frequency. Figures 3 and 4 show the verbal and adjectival constructions used over time. It is important to note that smoothed and raw data

show the development in a different way, and the data points of the smoothed trajectories do not have a one-on-one relation to the data points in the raw data figures.

Table 6

Lena's different phases of construction use: the mean frequencies and the variance of verbal and adjectival evaluative constructions

		Token frequency[a]		Type frequency		Repertoire: how many new constructions?		Token frequency variance	
Phase	Weeks	Verb.	Adj.	Verb.	Adj.	Verb.	Adj.	Verb.	Adj.
1a	1–9	2.84	0.26	1.75	0.22	All (6)	All (1)	4.99	0.14
1b	10–12	2.41	2.16	0.95	0.91	1	3	2.30	2.39
2	13–25	1.04	2.74	0.84	1.78	4	15	0.43	2.46
3	26–36	1.19	1.32	0.73	0.79	2	5	1.63	1.80

[a]The token and type frequencies are calculated per 100 words.

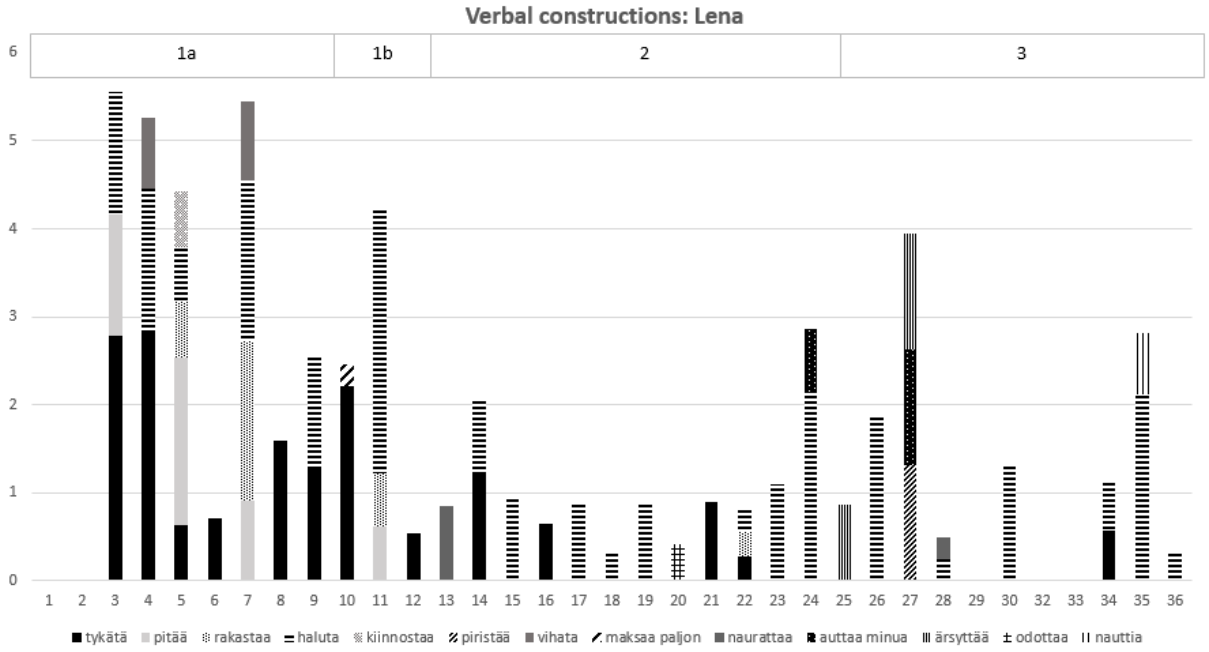

Figure 3 Different types of verbal constructions: Lena

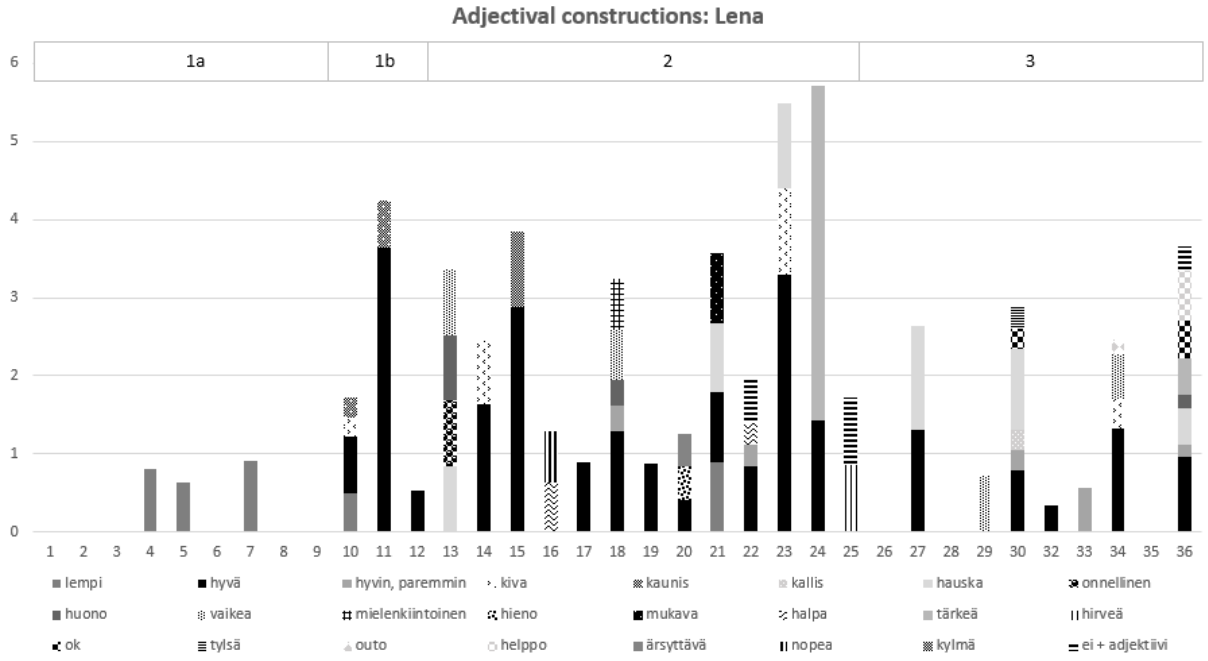

Figure 4 Different types of adjectival constructions: Lena

Averages of the raw data (Table 6) show clearly that initially, verbal constructions are used at the expense of adjectival constructions. In phase 1a, verbal constructions are used much more frequently than adjectival constructions: both the token and type frequency of verbal constructions are higher than those of adjectival constructions. In total 6 different verbal, but only 1 adjectival construction is used. In addition, the variance in the token frequency of verbal constructions is higher than that of adjectival constructions, indicating that on average, the token frequencies of verbal constructions deviate more from their mean token frequency in that period than do the token frequencies of adjectival constructions. In other words, from one session to the next, the token frequencies of verbal constructions vary on average between a wider range in that period than the token frequencies of adjectival constructions.

In phase 1b there seems to be a shift in Lena's language use. As the use of adjectival constructions peaks for the first time and becomes more varied, the token and type frequency of verbal constructions begins to decrease. In this phase, there is no big difference between the variance in the different types of constructions: the variance in the token frequency of adjectival constructions is only slightly larger than the variance in verbal constructions.

In phase 2, both the token and type frequencies of adjectival constructions are on average higher than the token and type frequencies of verbal constructions, which are now lower than in the two earlier phases. It therefore seems that the more frequent and variable use of adjectival constructions happens at the cost of the use of verbal constructions. The qualitative inspection confirms this observation: at this phase, the verbal constructions that Lena prefers are the *tykätä* 'like$_1$' and *haluta* 'want' constructions that are familiar to her from earlier weeks (see Figures 3 and 4). These two constructions are the most frequent ones in phase 2, and in weeks 14–19 they are the only verbal constructions used. Also, in this phase, the variance in the token frequencies of verbal constructions is lower than the variance in the token frequencies of

adjectival constructions. In fact, the variance in the token frequencies of verbal constructions is as its lowest level.

In phase 3, the use of verbal and adjectival constructions seems to become more balanced. The average token and type frequencies of the two types do not differ much. In some texts, verbal constructions are used more frequently, and in some texts, adjectival constructions. The variance in token frequency does not differ considerably between the two construction types.

Jungo

Similar kinds of phases can also be identified in Jungo's smoothed and raw data. In Figure 3, the LOESS-function visualizes the changing interactions between the constructions. Table 7 shows the averages frequencies for each phase as established on the basis of the LOESS curves and the raw data. Figures 4 and 5 show the verbal and adjectival constructions used over time.

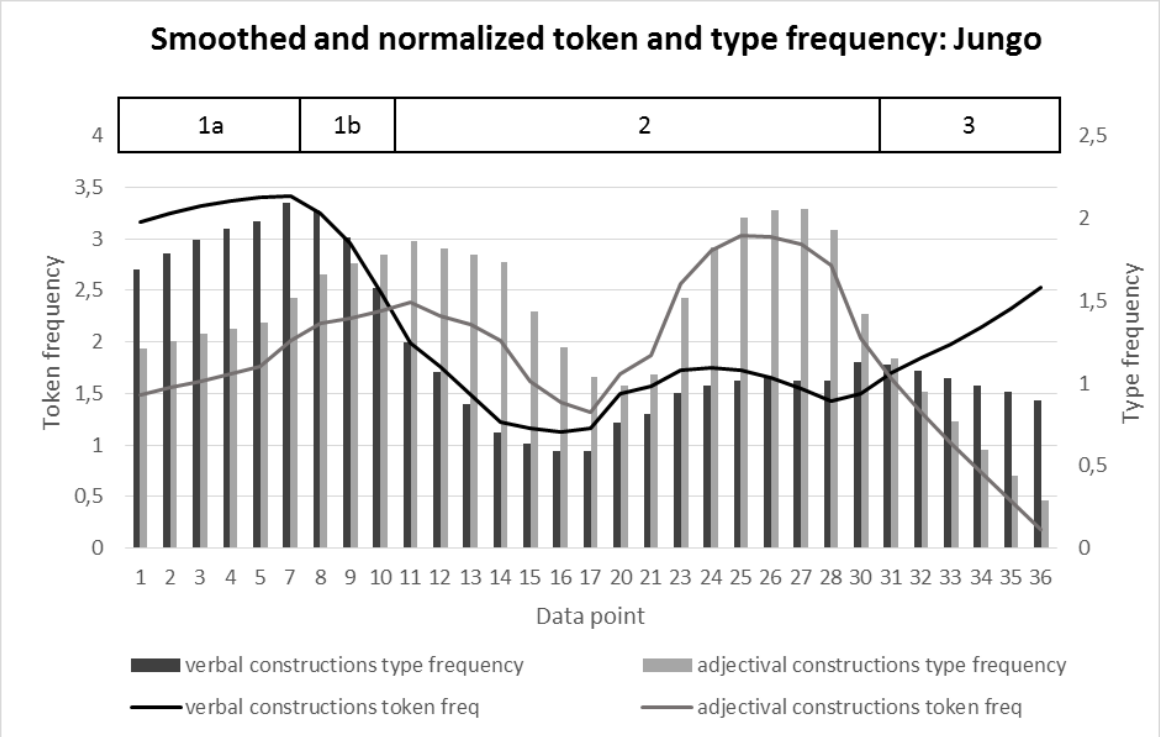

Figure 5 Jungo's smoothed normalized token and type frequencies of verbal and adjectival constructions

Also Jungo initially prefers verbal constructions, like *Minä rakastan Hiroa* 'I love Hiro' and *Mä myös haluaisin olla opettaja* 'I also would like to be a teacher'. This first phase roughly spans weeks 1–10 (Figure 3), and can be divided into two sub-phases. In phase 1a (weeks 1–7), the frequencies of both constructions are increasing, and in phase 1b (weeks 8–10), the frequencies of verbal constructions start to decrease. In the raw data (see Table 7, and Figures 4 and 5), we can also see the dominance of verbal constructions at the beginning (higher token and type frequency and the variance for the verbal constructions in phase 1). However, the total repertoire of different constructions is bigger for the adjectival constructions.

In phase 2, approximately between weeks 11–30, adjectival constructions, like *koska se on kaunis* ‘because it’s beautiful’ and *se on ihan söpö* ‘it is quite cute’, are preferred. In this phase, the peak in the use of adjectival constructions in weeks 21–30 does not seem to affect the use of verbal constructions: the frequencies of verbal constructions stay at roughly the same level in these weeks (see Figure 3). In this phase, Jungo uses almost exclusively verbal constructions that are familiar to him from earlier weeks, like *koska minua *lakastan *minua äitiä* ‘because I love my mother’ (see Figure 4).

In weeks 31–36, phase 3, there is a competitive relationship between the two types of constructions and verbal constructions are used more frequently. However, the type frequency of verbal constructions remains at a low level because Jungo relies mainly on the *haluta* ‘want’ construction.

Table 7

Jungo’s different phases of construction use: the mean frequencies and the variance of verbal and adjectival evaluative constructions

		Token frequency[a]		Type frequency		Repertoire: how many new constructions?		Token frequency variance	
Phase	Weeks	Verb.	Adj.	Verb.	Adj.	Verb.	Adj.	Verb.	Adj.
1	1–10	3.31	1.63	1.90	1.31	All (4)	All (6)	4.34	1.33
2	11–27	1.55	2.72	0.91	1.94	1	8	2.14	6.01
3	28–36	1.69	0.88	0.94	0.63	0	1	1.23	1.52

[a]The token and type frequencies are calculated per 100 words.

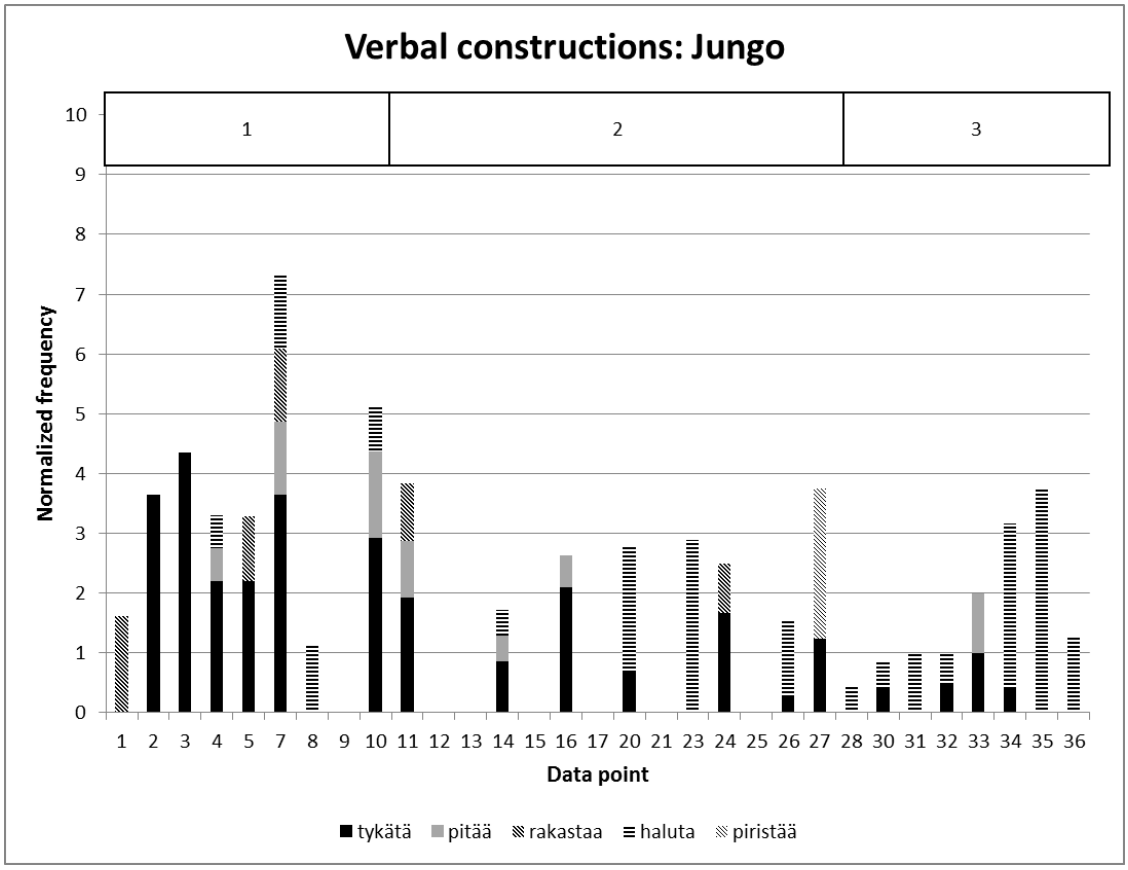

Figure 6 Different types of verbal constructions: Jungo

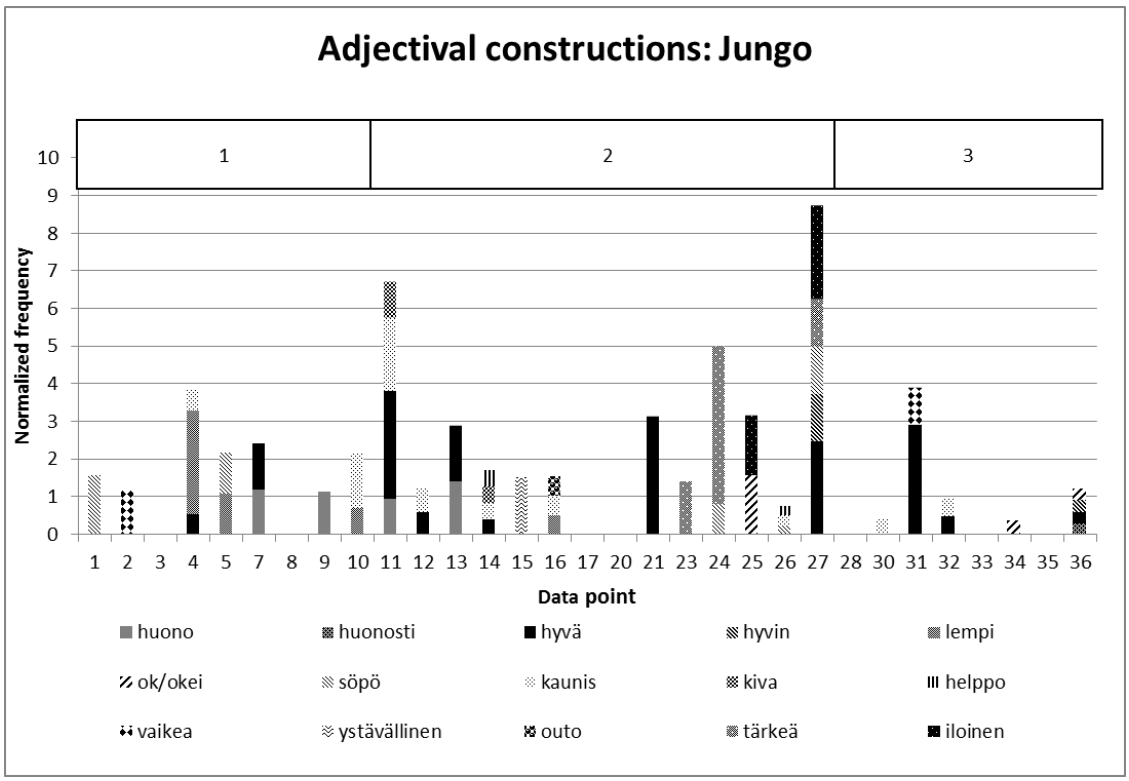

Figure 7 Different types of adjectival constructions: Jungo

Alvaro

Figure 6 visualizes the development of the two construction types over time. Table 8 shows the average frequencies for each phase as established on the basis of the LOESS curves and the raw data the two bar graphs (Figures 7 and 8) show the verbal and adjectival constructions used.

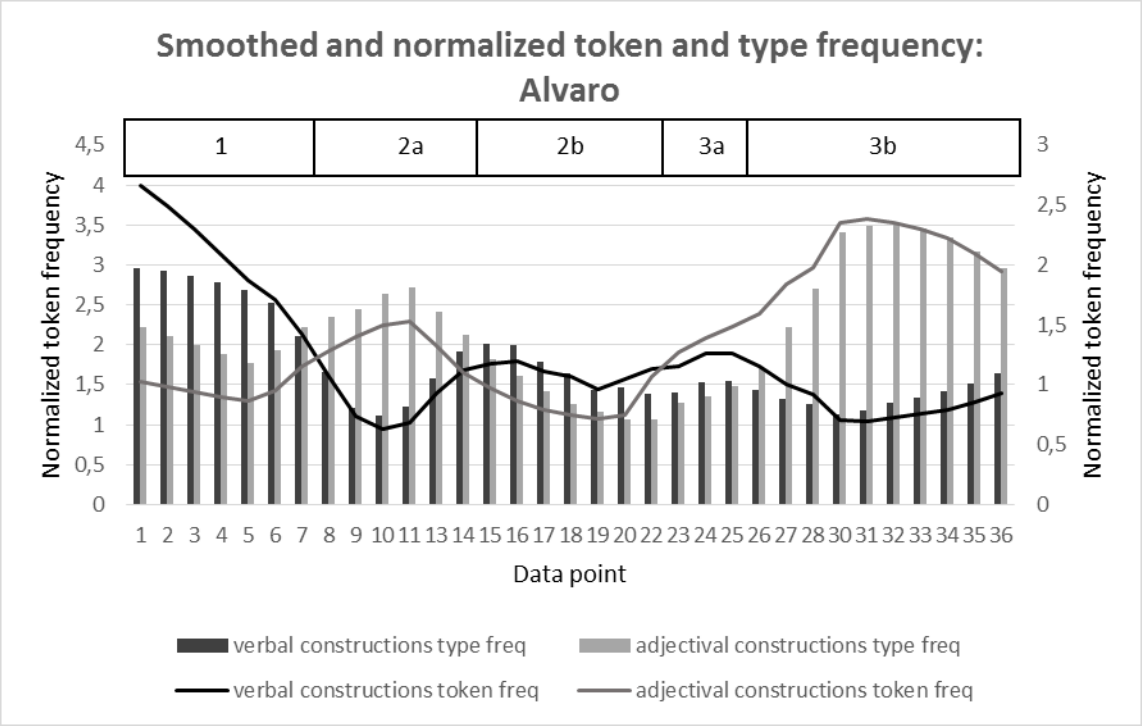

Figure 8 Alvaro's smoothed normalized token and type frequencies of verbal and adjectival constructions

Like Lena and Jungo, Alvaro initially uses verbal constructions, like *Tykkään *elokuvia* 'I like films' and *Mä *pidään kauhuelokuvista* 'I like horror films' more frequently and at the expense of adjectival constructions, like *hyvä idea* 'a good idea' and *Puhun espanjaa *hyvä* 'I speak good Spanish'. This phase 1 roughly spans weeks 1–7 (Figure 6). The dominance of the verbal constructions is also visible in the raw data (see phase 1 in Table 8 and Figures 7 and 8). However, as with Jungo, the reliance on verbal constructions is not as strongly visible as in Lena's data. In this phase, Alvaro uses in total 7 different adjectival constructions while he uses only 5 different verbal constructions. Moreover, in week 5, he uses many and several different verbal and adjectival constructions (see Figures 7 and 8).

In the middle of the period of observation, in phase 2, the pattern is mixed. The differences in the smoothed frequencies shown in Figure 6 are not as great as either initially or at the end of the period of observation. However, adjectival constructions are preferred at the beginning of this phase (phase 2a). The qualitative analysis based on the raw data shows that in this phase Alvaro uses only two verbal constructions: *rakastaa* 'love' and *pitää* 'like$_2$', which he already used in phase 1 (see Figure 7). In phase 2b, the frequencies temporarily stabilize at more or less the same level.

In phase 3, adjectival constructions are used frequently and variably at the expense of verbal constructions. The dominance of adjectival constructions is supported by the observation that in weeks 32–36, Alvaro again relies strongly on the familiar *haluta* 'want' and *rakastaa* 'love' constructions whereas his repertoire of adjectival constructions gets much larger (see Figures 7 and 8).

Table 8

Alvaro's different phases of construction use: the mean frequencies and the variance of verbal and adjectival evaluative constructions

		Token frequency[a]		Type frequency		Repertoire: how many new constructions?		Token frequency variance	
Phase	Weeks	Verb.	Adj.	Verb.	Adj.	Verb.	Adj.	Verb.	Adj.
1	1–6	3.54	1.39	2.06	1.27	All (5)	All (7)	1.41	2.47
2a	7–11	0.86	2.12	0.64	1.67	0	5	0.23	1.95
2b	13–23	1.87	1.19	1.30	0.93	0	5	1.21	0.51
3a	24–25	1.11	3.45	0.48	0.93	0	2	1.24	0.14
3b	26–36	1.30	3.19	0.90	2.09	3	10	1.71	3.37

[a]The token and type frequencies are calculated per 100 words.

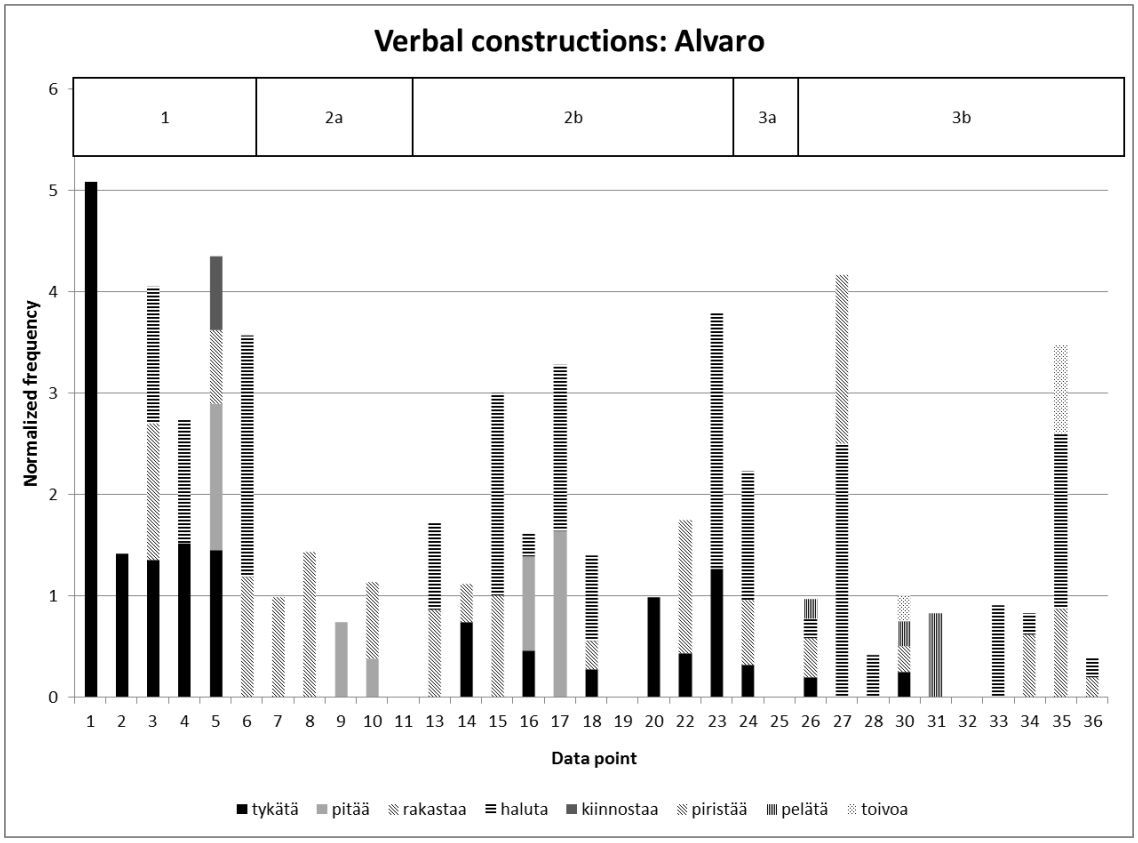

Figure 9 Different types of verbal constructions: Alvaro

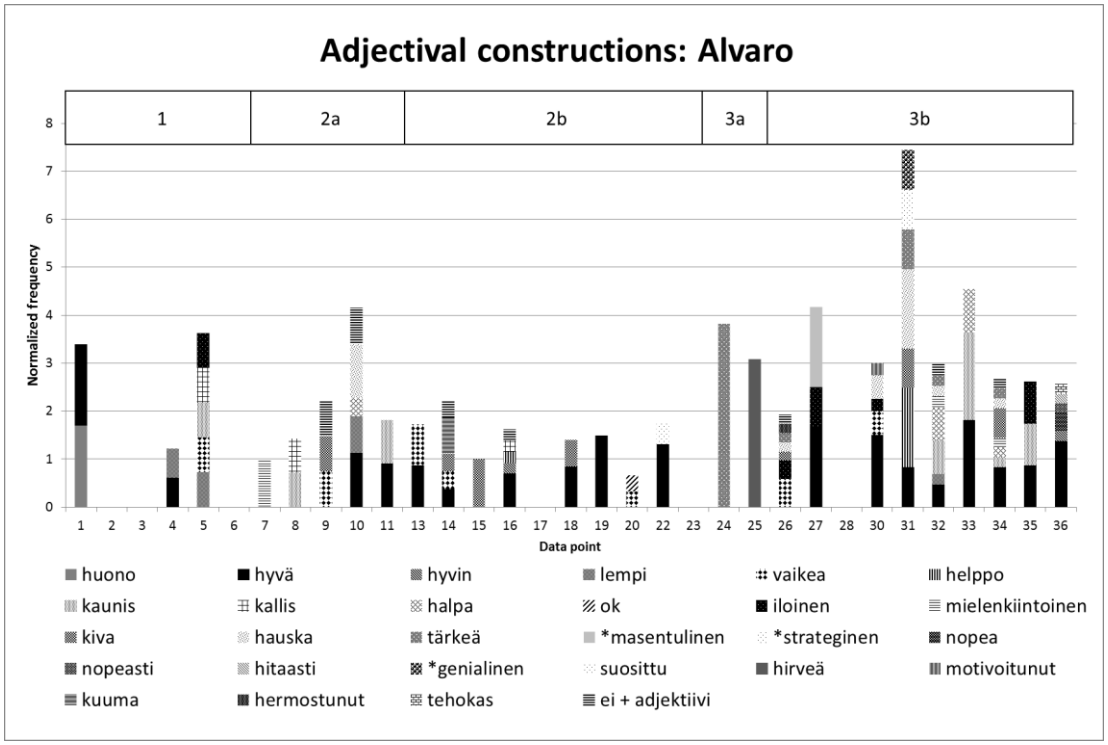

Figure 10 Different types of adjectival constructions: Alvaro

Khadiza

Also for Khadiza, phases in the use of verbal and adjectival constructions can be established based on smoothed data (Figure 9) and on raw data (Table 9, and Figures 10 and 11).

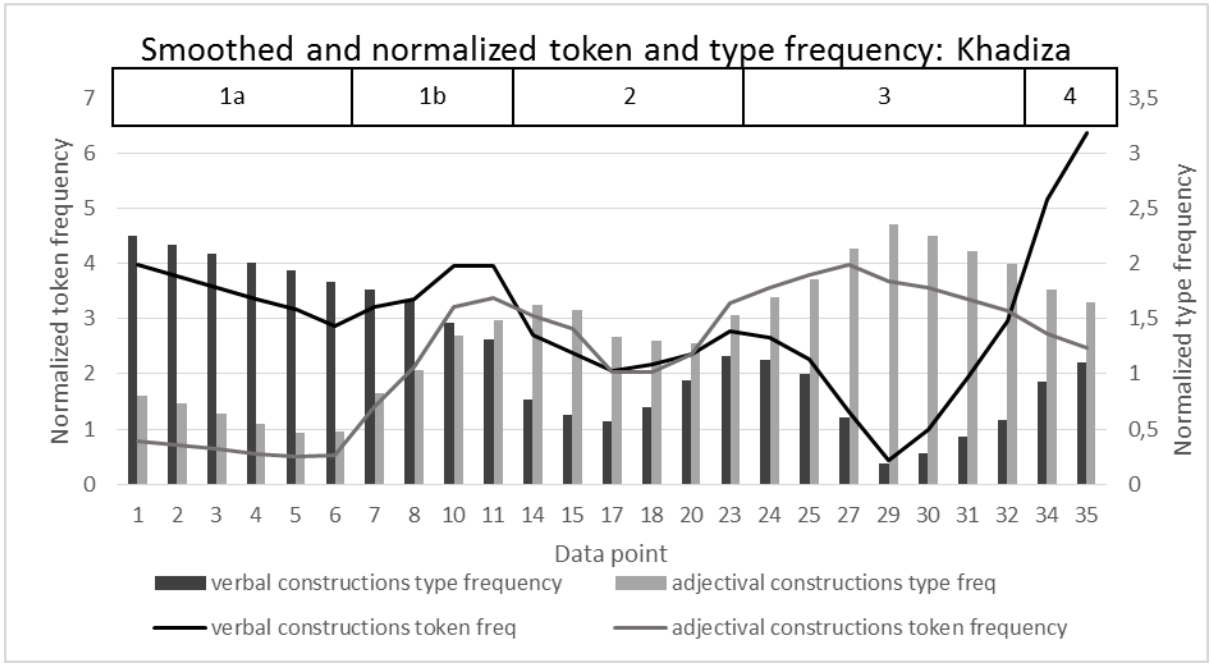

Figure 11 Khadiza's smoothed normalized token and type frequencies of verbal and adjectival constructions

As shown in Figure 9, Khadiza too begins with verbal constructions, like *minä pidän *Suomi* 'I like Finland' and *mua ei *kinnosta *kissalle* 'I'm not interested in cats' when expressing evaluation. This first phase -- which roughly spans weeks 1–11-- can be divided into two sub-phases. Between weeks 1–6, in phase 1a, the frequencies of both constructions are decreasing. Phase 1b begins when the token and type frequencies of adjectival constructions begin to increase. This evidently has an effect on the use of verbal constructions: between weeks 7 and 11 (phase 1b) their token frequency also increases but their type frequency decreases (see also phase 1b in Table 9). The increase in the use of adjectival constructions, like **hyva *saa *kesalle mutta huono *saa *talville* 'It's a good weather in the summer but bad in the winter' thus creates a competitive relationship regarding the diversity of adjectival and verbal constructions (i.e. the type frequency). In this phase, Khadiza relies strongly on the *pitää* 'like$_2$' and *tykätä* 'like$_1$' constructions, which are familiar to her from earlier weeks, and she uses only one new verbal construction.

In the middle of the period of observation, namely in phase 2, the smoothed trajectories do not show a competitive relationship between the construction types and one type is not used at the expense of the other. This second phase roughly spans weeks 14–23 (see Table 9 for a finer-grained division of the phases).

Towards the end of the period of observation, Khadiza has a clear adjectival phase in her use of constructions. In this phase of reduced use of verbal constructions, we can again observe a more frequent re-use of certain verbal constructions: the entrenched *haluta* 'want' and *pitää* 'like$_2$' constructions are used frequently (see Figure 10). The relatively sharp increase in the token frequency of verbal constructions from week 29 on, showed by the smoothed frequency, is due to a peak in the verbal *haluta* 'want' construction in week 35, which is regarded here as its own phase.

Table 9

Khadiza's different phases of construction use: the mean frequencies and the variance of verbal and adjectival evaluative constructions

		Token frequency[a]		Type frequency		Repertoire: how many new constructions?		Token variance	
Phase	Weeks	Verb.	Adj.	Verb.	Adj.	Verb.	Adj.	Verb.	Adj.
1a	1–8	3.19	0.49	1.98	0.49	All (7)	All (5)	2.47	0.58
1b	10–14	5.01	4.66	1.27	1.94	1	4	0.44	1.36
2a	15–18	0.10	1.93	0.10	1.63	0	3	0.02	0.07
2b	20–23	5.13	0.60	1.79	0.60	0	1	2.52	0.06
3	24–34	0.96	4.18	0.44	2.21	1	12	1.34	5.56
4	35	10.06	1.52	1.52	1.52	0	1	n.a.	n.a.

[a]The token and type frequencies are calculated per 100 words.

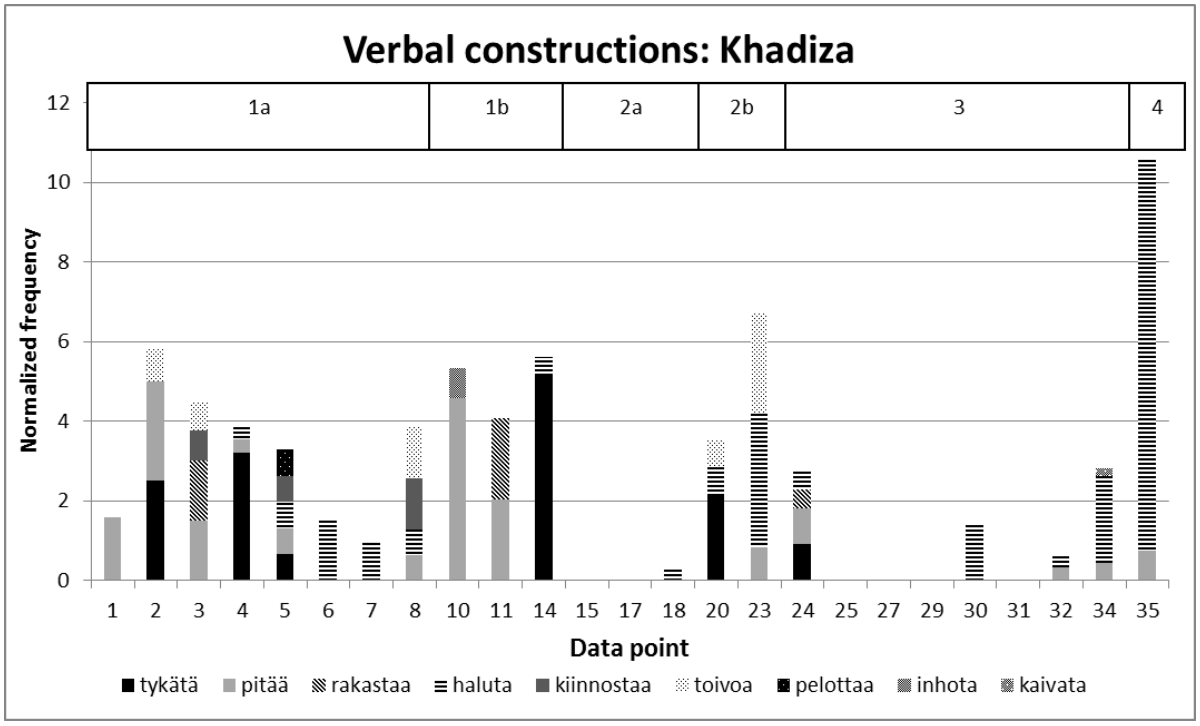

Figure 12 Different types of verbal constructions: Khadiza

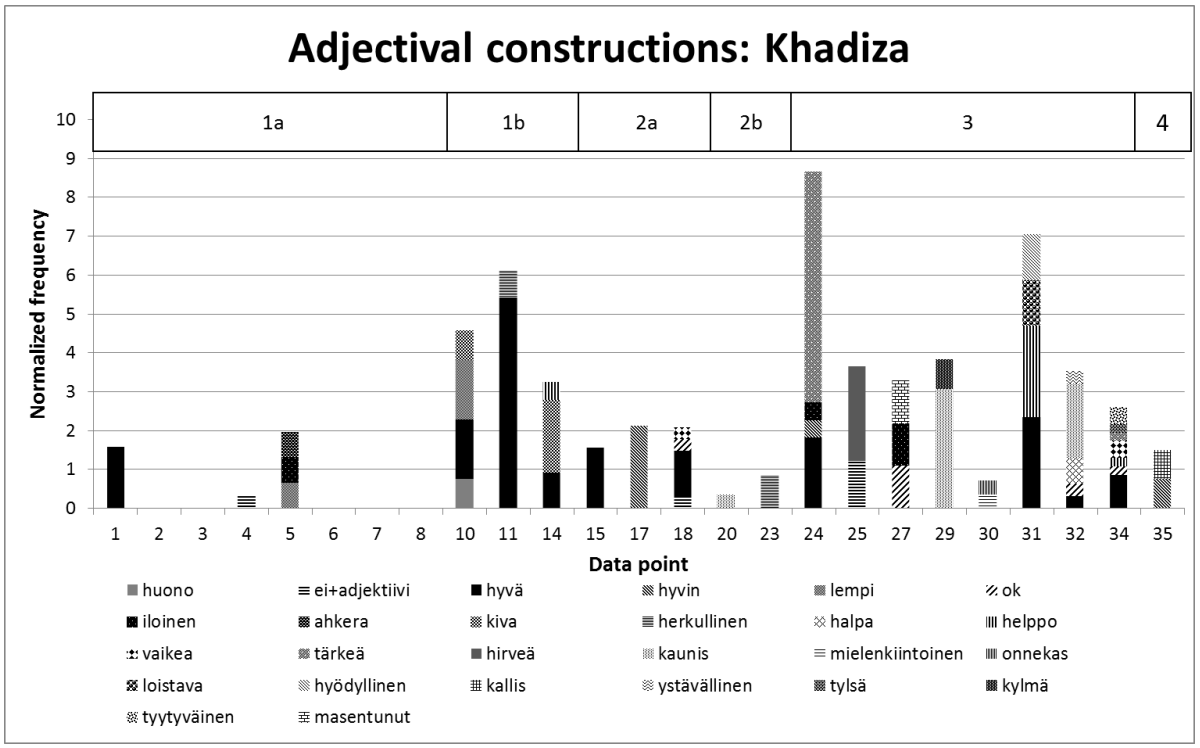

Figure 13 Different types of adjectival constructions: Khadiza

Discussion

Taking a dynamic usage-based approach we followed four learners of Finnish as an L2 longitudinally and aimed to discover whether any similar patterns of interaction and variability

could be found in these learners' developmental trajectories. We expected to find highly individual learning paths with some generalizable principles, namely a non-linear development of subsystems, a competitive interaction between subsystems, and increased variability in periods of progress. In this section, the two initial hypotheses will be dealt with separately.

H1: The learners will use mainly two constructions (verbal and adjectival) to express evaluations and these constructions have a competitive relationship.

This hypothesis is supported. All four learners used verbal and adjectival constructions almost exclusively to express evaluation. At the level of the utterance, these constructions are normally mutually exclusive, meaning that when an evaluative verb, such as *tykätä* 'like', is used, an adjective, such as *hyvä* 'good' is not used, and the other way around. Our study showed that also at the level of a text, all Finnish L2 beginners used these two types of constructions alternatively in certain phases of development.

For all learners, we found several phases in which verbal and adjectival constructions compete with each other or one type is used at the expense of the other. In the first weeks, all learners use verbal constructions at the expense of adjectival constructions in. After this, the learners show some differences in their trajectories. In Lena's and Jungo's data, an adjectival phase follows immediately after the verbal phase, in Alvaro's and Khadiza's developmental paths, the adjectival phase is only visible towards the end of the observation period. A significant feature in all four learners' adjectival phases is that when adjectival constructions are used more than before, verbal constructions are used either less frequently or in a less diverse way compared to their use in earlier phases.

These findings are in line with CDST findings in other longitudinal studies showing that when one aspect of a linguistic system is developing, there might be regression in another aspect. It has been shown for example that for an advanced learner of English, vocabulary and syntactic complexity competed with each other: progress in one led to regress in other (Author).

The fact that one construction is focused on at the expense of another would be expected within a CDST approach as the learner has limited attentional resources. This assumption is not new to Second Language Development (SLD) theory as it has been frequently referred to in cognitive approaches to SLD. For example, Skehan and Foster (1997) argued that learners are limited in their ability to coordinate and control attentional resources and can therefore not attend to different aspects at the same time, thus having to prioritize one language subsystem over others. This might be especially clearly visible in the language use of beginning learners (Skehan and Foster 1997). However, one essential difference between cognitive approaches to SLD and CDST is that in CDST the goal is not to explain causes or predict interaction but rather to describe the actual process.

H2: When one construction type is explored, this construction will show more variability compared to the other type.

This hypothesis is partly supported. For Lena, Jungo, and Khadiza, in the verbal phase, the token frequency variance of verbal constructions is higher than that of adjectival constructions.

In the adjectival phase, the token frequency variance of adjectival constructions is higher. This shows that there is more variability from text to text in the frequency of the construction type that is being explored. For Alvaro, the pattern of token frequency variance is not as clear as for the other learners. In his initial verbal phase, adjectival constructions exhibit more variability. However, in his adjectival phase in the last weeks, the token frequency variance of adjectival constructions is higher than that of verbal constructions, which is in line with our hypothesis.

This finding confirms the commonly held hypothesis in the development of dynamic systems, that a system that is in the phase of rapid progress exhibits more variability than a system that is not progressing as rapidly in that period (Ellis 1994; Author; Thelen and Smith 1994; Author). Exploring and trying out the new ways to express something leads to instability of the system and consequently to a growth in variability. Therefore, in CDST, variability is seen as a sign of development and is related to progress. This kind of variability pattern has been empirically established in L2 development. For example, a strong correlation between variability in holistic scores and proficiency gains has been reported (Author) and it has been found that a twin who showed more variability made more progress (Author).

The non-linear patterns with variability patterns found in our study are not new to SLD studies either as variability was studied especially in the 1980s. In these studies - inspired by variationist research in sociolinguistics (see Labov 1963) - the focus was mainly on explaining the causes of this variability, such as the task conditions (see Tarone 1983 for a review). This is not the aim of CDST studies. In CDST, patterns of variability are assumed to give insight into development. Ellis (1994), one of the first to note this in SLD, found that there was some degree of free variability, variability that could not be attributed to any known linguistic, situational, or psychological factor. In sum, variability is an intrinsic property of a developing system: free exploration of performance generates variability and it can be seen as a prerequisite for and a sign of development.

The current study contributes to our understanding of L2 as a complex dynamic system by showing that competitive interaction of subsystems and variability within these subsystems are found in the L2 also when a subsystem is viewed from the point of view of meaning and not form, i.e. when the onomasiological approach is used. In previous CDST-oriented studies, accuracy and complexity have been seen as subsystems (Caspi 2010, Tilma 2014, Author (several)). This study suggests that the two developmental characteristics, competition and variability, may be considered as general features of a developing L2 because they were found when different, although nested, subsystems than in previous studies were studied.

In sum, this study was able to show that there are some common characteristics in the four learners' development despite the learners' clearly individually owned trajectories and other individual factors such as L1 or length of stay in Finland. However, in this study, the participants learned Finnish in the same instructional context, which may have influenced the fact that all of the learners initially used more verbal constructions. At the beginning of the study, the classroom activities that focused on expressing evaluation presented some adjectival constructions but emphasized verbal constructions (Exercises in weeks 3 and 4: How can you express liking and disliking in Finnish? Find out what other students like. What kind of music

do you like/don't you like?). Therefore, the more frequent use initially of verbal constructions at the expense of adjectival constructions could partly be explained as instructional effects. However, later on in the study, both verbal and adjectival constructions were presented and used in the classroom activities (see Supplementary File 2). Since after the first course there are differences between learners in the timing of the adjectival phase, it could be argued that later on the instruction did not play a big role in the emergence of different phases.

The overall conclusion is that despite the individual learning trajectories, these four beginning learners of L2 Finnish showed some similar patterns in their development. Our findings therefore confirm the assumption put forward by Larsen-Freeman and Cameron (2008: 10) that "each individual achieves the success that he or she does in a unique way". However, the very general characteristics of L2 development found in the current study - namely the non-linearity of development and the increased variability when progress is taking place - might be something that could be generalized to a bigger group of learners. This might be the case even though, broadly speaking, findings from individual case studies cannot be generalized to groups (and vice versa). Because "no two situations can be similar enough to produce the same behavior" (Larsen-Freeman & Cameron 2008: 16), we cannot predict the course of L2 development, but the value of case studies is in their potential to describe and hence help us to understand the process of L2 development (Author).

Limitations

When analyzing this kind of data, task effects will play a role. There are texts in which the given task certainly affected the constructions that the learners used. For example, the task in week 24, 'What is important in your life?' inevitably triggered the *tärkeä* 'important' construction in every learner's speech. In week 14, Khadiza had a speaking partner who extensively used the *tykätä* 'like$_1$'construction, which possibly played a role in the high frequency of that construction in Khadiza's own speech. However, since all of the participants had the same tasks and there are inter-individual differences in the frequencies of constructions used in any given week, we may conclude that the patterns found in the learners' developmental paths are not primarily due to the tasks. Besides, the patterns are also visible in the smoothed trajectories, where any task effects would be filtered out due to the smoothing.

One apparent limitation of case studies is the generalizability of the results to other learners: by definition, individual learning trajectories cannot be generalized to other learners (Author). However, there are some patterns that seem to be generalizable in L2 development. The findings of this study are in line with some earlier CDST inspired studies in that they show the non-linearity of development (alternation of progress and regress), increased variability when progress is taking place, and competitive relationships between different constructions.

Conclusion

The aim of this study was to investigate the development and interaction of formal verbalizations of evaluation used by four beginning L2 learners of Finnish. We may conclude that our onomasiological approach has been able to confirm that competition may occur among constructions and degrees of variability are signs of development despite the fact that each

learner has his or her individual trajectory. The study showed that at certain points of development, different evaluative linguistic constructions are in a competitive relationship with each other, or one type is used at the expense of the other. These findings therefore support the view of a developing L2 as a dynamic system in which a change in one component affects the other interconnected components of the system (Author). The second major finding of this study was that during phases of intensive progress, more variability occurred in the frequencies of the constructions. This finding is in line with earlier findings of variability patterns in a developing an L2 (Author; Tilma 2014) and adds to the growing body of research that indicates greater variability in phases of rapid progress.

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Appendix 1. Glossing.

ADE adessive

ELA elative

PAR partitive (partitiveness)

PL plural

PST past tense

SG singular

1 1st person ending

3 3rd person ending

3

Lexically specific vs. productive constructions in L2 Finnish learners

by

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Lexically specific vs. productive constructions in L2 Finnish learners

Introduction

In usage-based approaches, language is seen as a structured inventory of symbolic units (Langacker, 1987), i.e. constructions. Constructions are form-meaning pairings that consist of a phonological pole (including orthographic representation) and a semantic pole. Each pole can evoke the other, and the symbolic nature of a construction resides in a link between the phonological and the semantic poles (Langacker, 2013). In usage-based linguistics, learning to use these symbolic structures is seen as an emergent process: through exemplar learning, a learner's individual inventory of constructions emerges from natural language use in social interaction (e.g. Ellis & Cadierno 2009; Tomasello 2003).

The usage-based learning path is assumed to emerge from lexically specific towards schematized patterns (Peters, 1983; Tomasello, 2003). This has been established in a number of empirical studies of L1 development. For example, Dąbrowska and Lieven (2005) show that L1 learners' constructions develop in an item-based manner from lexically specific, formulaic expressions into more productive, abstract schemas.

This usage-based learning path has also been proposed as a "default" guideline (Ellis 2002: 170) for investigating L2 development, and in some studies it has been shown that L2 learners also start with lexically specific expressions and gradually move towards more abstract constructions (e.g. Mellow 2006; Eskildsen 2008). However, especially Roehr-Brackin (2014) has shown that L2 learners may also use schematic constructions from the beginning.

The aim of this paper is to investigate whether the general assumption of item-based learning in L1 holds for L2 learning in four individual cases. To do this, we traced the development over the course of nine months of two different but similar constructions (*haluta* 'want' and *tykätä* 'like') in four beginning L2 Finnish learners with different L1s.

The usage-based learning trajectory

According to Langacker (2013), language learning is a bottom-up process: the learner moves from lexically specific expressions towards more abstract and productive patterns. This development is enabled by general cognitive mechanisms such as association, categorization, schematization, and entrenchment (Langacker, 2013).

As the learner is exposed to a target language, she or he learns to associate the phonological pole with the semantic pole (Langacker, 2013). For example, *Haluan matkustaa* will be associated with the meaning 'I want to travel'. In categorization, the learner compares novel utterances with utterances already encountered to form categories and discover similarities (Langacker, 2013). For example, when comparing *Haluan matkustaa' I want to travel'* with *Haluan syödä* 'I want to eat', the learner may realize that these expressions denote wanting,

and that both *matkustaa* and *syödä* denote desired actions and belong to the same group of words.

Schematization occurs when a learner encounters a number of target language expressions and extracts the commonalities inherent in them while at the same time ignoring differences between them (Langacker, 2013). During the process of schematization, the learner generalizes over lexically specific utterances and in this way develops abstract knowledge about the different parts of the construction and their communicative functions (Goldberg, 1995). For example, when the learner encounters the *haluta* 'want' construction with several different verbal complements (e.g. *Haluan matkustaa* 'I want to travel' and *Haluan syödä* 'I want to eat'), over time he or she will be able to develop the pattern *haluan* + non-finite clause (NFC) '*I want* + NFC' based on the fact that these expressions all describe one's desire for different actions (semantic pole) and all show a similar form, *haluan* + verb stem + A[1] (phonological pole). In other words, the learner develops a schema with an open slot for non-finite clauses. The generalities derive from the learner's experiences of using language for the purposes of interaction; in other words, they spring from usage events. (Eskildsen, 2008.)

Finally, entrenchment refers to the process of automatization: when a memory trace is repeatedly activated, it becomes established as a unit. An entrenched unit can be easily accessed and activated when necessary. (Langacker, 2013.)

To summarize, in usage-based approaches the learner is seen to move gradually from holistic, rote-learned, lexically specific formulas such as *Haluan matkustaa Saksaan* 'I want to travel to Germany', via semi-schematic, semi abstract patterns such as *Haluan matkustaa* + noun phrase (NP) 'I want to travel + noun phrase (NP), towards a more productive pattern, such as *Haluan* + NFC 'I want + NFC', possibly as far as a fully abstract schema 'V + NFC' (see e.g. Tomasello, 2003; Dąbrowska & Lieven, 2005; Langacker, 2013; Eskildsen, 2008). All types of construction can become entrenched, coexisting in the speaker's individual linguistic inventory (Langacker, 2013).

Several L2 longitudinal studies confirm the commonly found L1 path of development, from lexically specific to more schematic patterns. Eskildsen (2008) shows that an L2 English learner's abstract *can* construction sprang from a specific multiword expression, *I can write.* He also showed that an L2 English learner initially used very few conjunctions in subordination and coordination, supporting the idea of item-based learning (Eskildsen, 2018). Cross-sectional data show the same type of development. Roos and Lenzing (2018) suggest that as proficiency increases, the use of formulaic sequences decreases and accounts for a smaller part of a speaker's production. These studies all suggest that L2 learners start from (at least to some extent) fixed expressions and over time move to more abstract ones, demonstrating more productive and flexible language use.

[1] Capital A stands for a vowel change, which can be either a or ä depending on the vowels in the word, see VISK § 15

The question that arises is whether L2 learners only move from specific to abstract constructions in their development, or whether they may also already have more schematic and productive and flexible patterns in their linguistic inventory from early on. Langacker (2009) suggests that a productive, abstract schema can be developed even if "no specific lexical sequence is repeated" (p. 633) and stored as a unit. For example, a learner may form an abstract pattern such as a verb and object with a directional by encountering various verbs of caused motion such as *throw it away, pick it up, put it down*, without learning any of these expressions individually. In other words, forming an abstract pattern does not necessarily start with the use of lexically specific chunks. In L2 learning, this kind of learning trajectory has been empirically established by Roehr-Brackin (2014) and Eskildsen (2015).

In Roehr-Brackin's study (2014), an L2 German learner's *gehen* 'go' construction was already initially abstract, in contrast to a similar, *fahren* 'drive' construction, which developed in an item-based fashion from lexically specific units into a more abstract pattern. Also Eskildsen (2015) shows that an individual learner may use both lexically specific and more productive patterns in the initial phases of learning. For one adult L2 English learner, the initial use of declarative copula questions was more productive than that of interrogative copula questions (Eskildsen, 2015).

There is also evidence from cross-sectional data that learners might actually start off with some general schemas. Arndt-Lappe and Baldus (2018) suggest that because low-proficiency learners overgeneralized the investigated patterns (*to*-infinitival complements and penultimate stress in complex words in English), they formed a general schema and only later developed more fine-grained sub-schemas. In other words, L2 learners may also use a top-down process, starting with very abstract generalizations and later moving to more specific schemas.

There are various reasons why both top-down and bottom-up processes may take place in L2 development such as instruction and knowledge about other language systems, especially the L1. As far as L2 instruction is concerned, Roehr-Brackin (2014) argues that the L2 German learner's explicit knowledge may have sped up the schema formation for the initially abstract *gehen* construction. As far as the L1 is concerned, Smiskova-Gustafsson (2013) shows in her study of the development of conventionalized ways of saying things (CWOSTs) that L2 learners may not treat a beyond-word-level concept holistically and may not map it directly onto a conventionalized expression in L2. For example, the Dutch equivalent of the English expression *to put money in the bank* is *geld op de bank zetten* (literally: money on the bank put) and beginners frequently used the L2 English pattern *put* NP *on* DET *bank*, corresponding with L1 Dutch *zet* NP *op de bank*. Thus when expressing the meaning DEPOSITING MONEY, learners seem to first break down the concept into meaning units (process, thing, location), then search for linguistic solutions for them, and finally merge these fragments using the abstract verb-argument schema.

To summarize, previous research has established that as with L1 acquisition, some L2 constructions develop in an item-based fashion. However, a few studies have shown that some L2 constructions are - at least to some extent - schematic almost from the start. In usage-based linguistics, it is predicted that learners move towards more abstract constructions

over time and even develop fully abstract representations. There is some empirical evidence for L2 learners' fully abstract knowledge (Eskildsen and Cadierno, 2007), but the development of fully abstract constructions in L2 learning has also been questioned (see e.g. Eskildsen, 2008). Constructing an L2 is assumed to be an ongoing process without an actual endpoint (Eskildsen, 2008), as is linguistic development in general (see Hopper, 1998). Therefore it might be misguided to trace fully abstract L2 representations. A better question might be to ask about the extent to which L2 constructions become more schematic and abstract over time. It has been shown that some constructions might lend themselves to abstraction more easily than others (Eskildsen, 2008) and there is also a lot of inter-individual variability in L2 learning.

The current study aims to explore these possible developmental patterns in more depth with longitudinal L2 developmental data in L2 Finnish. We traced four learners over a period of 9 months in their use of *haluta* 'want' and *tykätä* 'like'. The verbs were relatively frequent in our data and can be considered good material for comparison because they are similar both semantically and structurally: they can both be seen to express an evaluation towards something (see Lesonen, Suni, Steinkrauss & Verspoor 2017) and they allow the same kinds of complements (see below, Targeted L2 constructions). The term lexically specific is used to refer to a construction in which the main verb, here, *haluta* or *tykätä*, repeatedly takes the same form (e.g. the first person singular) and the lexical material in the complement shows little variation. The lexical specificity of constructions is investigated as evidenced in production, and is likely stemming from instances encountered in input. Productivity in this study is defined as variability within the construction: the more different forms of the main verb (i.e. *haluta* and *tykätä*) and the more different complements are used, the more productive the pattern is. As we will argue later, the level of productivity forms a continuum.

The study

This study aims to explore the following questions:

1) Does the development of the *haluta* 'want' and *tykätä* 'like' constructions of four Finnish L2 learners start with lexically specific expressions?
2) Do these initial constructions develop into more abstract patterns over time?

Based on earlier studies we hypothesize that

H1: Learners start mostly with lexically specific constructions but constructions might also already be more abstract initially.

H2: Initial constructions develop into more abstract patterns but learners will show different levels of abstractness in their constructions at the end of the period of observation.

Participants

In this study, we traced the development of two verbal constructions in four adult Finnish L2 learners. These learners formed the entire group of students who took the same three consecutive language courses at the same Finnish university; originally c. 20 students were followed. The courses were each worth 5 ECTS and they consisted of 70 contact hours plus additional independent work. The first course was at level A1 in the European Framework of Reference for Languages (Common European Framework of Reference for Languages, Council of Europe, 2001). The second course was at level A2, and the third one at level B1. All three courses were given during one academic year. The courses were taught by a native Finnish speaker, the first two courses by the first author, the third one by a colleague. The research questions were set after the data collection and therefore the study did not have an impact on teaching.

Background information on the participants is presented in Table 1.

Table 1
Background information on the participants

Participant	Age	L1	Other languages	Time of residence before the study	Explicit instruction before the study
Lena	23	German	English[1] [2], French[1], Icelandic[1] [2]	0	0
Jungo	22	Chinese (Hunanese)	Mandarin Chinese[1], English[1]	2 years	1 Finnish course of 5 ETCS, 20 hours self studying
Alvaro	30	Spanish	English[1], French[1] [2], Russian[1]	0	0
Khadiza	31	Bangla	English[1], Hindi, Urdu	4 years	0

[1] Learned in instructional setting. [2] Learned in target-language-speaking community.

Data collection

The data were collected weekly and include both written and spoken data. The data are free response data. The topics were chosen in accordance with the participants' language proficiency and similar topics were covered in the classroom, although the tasks themselves were not practiced in the classroom. The number of points of data collection is shown in Table 2.

Table 2
Number of points of data collection

	number of points of data collection	written data	spoken data
Lena	35	17	18
Jungo	35	18	17
Alvaro	33	16	17
Khadiza	28	16	12

The written data were produced by hand either during the contact lessons (with a time limit of approximately 20 minutes) or in the participants' free time (under supervision but without a

time limit). The writing samples are on average 99 words long, the length ranging from 40 to 176 words.

The spoken data were recorded in a language studio, with a recorder (Roland R-05); with Lena, a smart phone was used once. The spoken data comprise both monologues and dialogues. The participants' speaking partner in the dialogues was either another L2 speaker or sometimes an L1 Finnish speaker. Mostly, the L1 speaker in the dialogues was the first author of this paper. Since the research questions were set after the data collection, this double role should not have an impact on the data collection. The speaking samples are on average 259 words long (range 63–629 words).

Targeted L2 constructions

In this study, the language units under investigation are learner language constructions. Constructions are form-meaning mappings consisting of two poles (Goldberg, 2006). According to Goldberg (2006), one characteristic of a construction is that a certain aspect in its meaning or form is not strictly predictable from the components of the construction. For example, the meaning of the *tykätä* 'like' construction (see Example 1) cannot be predicted from its parts: the stem of the verb *tykätä* 'like', the first person singular ending *-n*, the adverb *enemmän* 'more', the stem of the noun *talvi* 'winter', and the elative ending *-sta*. In other words, the meaning of the construction does not build up as the parts are stringed together, but the meaning lies in the ensemble of the parts.

Example 1.	*Tykkää-n*	*enemmän*	*talve-sta.*
	Like-1SG	more	winter-ELAT
	'I like winter more'		

When L2 learners use the constructions, the constructions may exhibit different kinds of deviations from native-speaker conventions (see Example 2 for the *tykätä* 'like' construction). Therefore, in this study, we have slightly extended Goldberg's (2006) definition of a construction - a conventionalized pairing of form and function - to include the L2 learners' emergent form-meaning mappings, which may not yet seem conventional from the viewpoint of L1 speakers or proficient language users. If the form of the learner language construction resembles the form of the conventionalized construction, the link between the form and function in the learner's construction remains clear and the construction is hence understandable (compare Examples 1 and 2). Moreover, it should be pointed out that also learner language constructions that are not frequently occurring - a characteristic of a construction presented by Goldberg (2006) - are included in the analysis, because the learner language constructions are often transient.

Example 2.	*Tykkää-n*	*enemmän*	**talvi*
	Like-1SG	more	*winter(NOM)
	I like winter more		

In the current study, all utterances with the *haluta* and *tykätä* construction were selected for analysis. The number of utterances for each participant is shown in Table 3.

Table 3
Number of utterances with haluta 'want' and tykätä 'like'

	haluta 'want'	*tykätä* 'like'
Lena	49	34
Alvaro	36	26
Khadiza	43	33
Jungo	34	35

The *haluta* and *tykätä* verbs, like any other verb in Finnish, agree with the subject (see Examples 3 and 4 for the first and second person singular forms). Finnish verbs are conjugated in four tenses and in four moods (VISK § 1523 § 111). Negation is marked with the negative *ei* (see Examples 5 and 6) (VISK § 108).

Both the *haluta* and *tykätä* constructions can take as complement a noun phrase (NP) or a non-finite clause (NFC). For the *haluta* construction, the form of the noun phrase within the construction depends on the context: most frequently the complement is in either the partitive or the genitive case. The *tykätä* construction requires the elative form of the noun phrase, which is marked with the ending -stA (see Example 5). For both constructions, the verb within the verbal phrase is in the infinitive. The *haluta* construction can also have a sub-clausal complement. Examples 3–6 show the NP and NFC complements for both constructions. The first row stands for the schema of the construction, the second row is the actual construction in Finnish, the third row is the glossing (see Appendix 1) and the fourth row is the English translation.

Example 3. [HALUTA + NP]
Halua-n *kahvi-a.*
Want-1SG coffee-PAR
'I want coffee'

Example 4. [HALUTA + NFC]
Halua-t *matkusta-a* *Saksa-an.*
Want-2SG travel-INF Germany-ILL
'I want to travel to Germany'

Example 5. [TYKÄTÄ + NP]
E-n *tykkää* *kahvi-sta.*
NEG-1SG like coffee-ELAT
'I don't like coffee'

Example 6. [TYKÄTÄ + NFC]
E-t *tykkää* *matkusta-a* *Saksa-an.*
NEG-2SG like travel-INF Germany-ILL

'You don't like to travel to Germany'

Analytic procedures

Because our interest was in finding out whether our participants' constructions develop from lexically specific to productive patterns, we calculated the number of different forms of *haluta* and *tykätä* and the number of different types of complements (noun phrases (NP), non-finite clauses (NFC), and sub-clauses). We also calculated how many different noun phrases, non-finite clauses, and sub-clauses were used. Non-target-like forms were included in the count. Based on these numbers, the learners' constructions were put on a continuum from lexically specific to productive. Productivity is a relative notion here, and no claim about absolute productivity or schematicity is made.

Table 4 shows the continuum between lexically fully fixed constructions and highly variable, schematic constructions. For the purposes of this paper, we will define four types of constructions along this continuum. An example of a fully fixed expression is *Haluan matkustaa Saksaan* 'I want to travel to Germany', as it occurs repeatedly in exactly the same form without an open slot. In this paper, these expressions are called lexically specific, formulaic expressions. *Haluan matkustaa* + NP 'I want to travel + NP', on the other hand, is an example of what we call a mostly formulaic expression (the term corresponds with Eskildsen's (2008) term, partially fixed, partially schematic utterance schema). These expressions have one variable part (i.e. new lexical material is used compared to the earlier use), i.e. the construction has an open slot. Constructions like *Haluan* + NFC have more than one open slot if the NFC has variable parts, and they are called semi-schematic, semi-abstract patterns in this paper. HALUTA + NFC is a fully schematic, abstract pattern if the verb is used in various forms with different realizations of non-finite clauses and these expressions are highly variable and productive.

Thus in this study, productivity is defined purely based on the variability of the slots within the construction. The productivity of our learners' constructions is not compared to native-like productivity but a change in productivity is seen as a change relative to the learners' earlier use of the constructions. However, as more proficient language use is characterized by increased variability and flexibility, an increase in productivity can be seen as more proficient language use.

Table 4
Continuum between lexically specific and productive constructions, where the NP and NFC are open variable slots

	← →			
Example	*Haluan matkustaa Saksaan* 'I want to travel to Germany'	*Haluan matkustaa* + NP 'I want to travel + NP'	*Haluan* + NFC 'I want + NFC'	HALUTA + NFC WANT + NFC
Type of construction	Lexically specific, formulaic expression	Mostly formulaic expression	Semi-schematic, semi-abstract pattern	Fully schematic, abstract pattern
Fixedness of the construction	Fully fixed	Partially variable: construction has one open slot	Semi-variable: construction has more open slots	Highly variable
Degree of productivity	Not productive			Highly productive

Results

In this section, the four learners' developmental trajectories of the *haluta* 'want' and *tykätä* 'like' constructions are described by means of representative examples. Each learner will be reported on separately, first regarding the *haluta* construction and then the *tykätä* construction.

Lena

Haluta

With the *haluta* construction, Lena initially (weeks 3–5) uses mostly formulaic expressions (see Table 5). The formulaic part in the construction concerns the form of *haluta* itself and the verb within the non-finite clause. Regarding *haluta*, Lena uses the first person singular conditional (*haluaisin*, with little variation in orthographic form in week 1) in five of the six utterances, and the second person singular conditional (*haluaisit*) in another utterance, and regarding the verb phrase, *matkustaa* (to travel) (also with little variation in orthographic form) is used in five and intended in the remaining one of the six utterances. The variable part concerns the noun phrase within the non-finite clause (see the fourth column of Table 5). Hence, Lena's *haluta* construction starts with the pattern [*haluaisin matkustaa* + NP], which has one open slot.

Table 5
Lena's initial use of the haluta construction

Utt.No.[2]	HALUTA	NFC	
		Verb	NP
3.1	**Haillo-ia-ni* *Want-COND-1SG intended meaning: *Halua-isi-n* Want-COND-1SG	**matkest-a* *travel-INF	*Lappi-in, *Hankasalmie-lle ja Oulu-un.* Lapland-ILL, *Hankasalmi-ALL and Oulu-ALL
4.1	*Halua-isi-n* Want-COND-1SG	*matkusta-a* travel-INF	*Jyväskylä-stä Saksa-an.* Jyväskylä-ELA Germany-ILL
4.2	*Ja halua-isi-n* And want- COND-1SG	*matkusta-a* travel-INF	*lentokonee-lla.* plane-ADE
4.3	*Halua-isi-n* Want- COND-1SG		*Saksa-an ja myös Lappi-in ja Tamperee-lle.* Germany-ILL and also Lapland-ILL and Tampere-ALL
4.4	*Mih-in halua-isi-t* Where-ILL want-COND-2SG	*matkusta-a?* travel-INF	
5.1	*Halua-isi-n* Want-COND-1SG	**matkakust-a* *travel-INF	**Venäjä-än, ja Suome-ssa Lappi-in, Hankasalme-lle,* *Russia-ILL, and Finland-INE Lapland-ILL, Hankasalmi-ALL, **Oulu ja *Helsingi-in.* *Oulu and *Helsinki-ILL

In week 6, Lena for the first time combines *haluta* with a verb other than *matkustaa* 'to travel', but still uses the first person singular conditional form of *haluta*. In the following weeks, new forms of the *haluta* verb are combined with different non-finite clauses (see Table 6). It therefore seems that Lena has started to develop a more abstract construction and is moving toward a schematic [HALUTA + NFC] pattern.

Table 6
Lena's use of the haluta construction in weeks 6–11

Utt. No.	HALUTA	NFC	
		Verb	Sub clause / NP
6.1	*Halua-isi-n,* Want-COND-1SG	*sano-a,* say-INF	*e-n tule syntymäpäivä.* NEG-1SG come birthday
7.1	*Ja Marja halua-isi* and Marja want-COND(3SG)	*oppi-a* learn-INF	*englanni-n *kieli.* English-GEN *language
7.2	*ja haluaa* and want(3SG)	**osa-ta* *know-INF	*jäätelö-t.* ice.cream-PL

[2] This column indicates the utterance number, for example, 3.1 means that the utterance was produced in week 3 and is the first utterance with the verb *haluta*.

9.1	*Halua-n myös* Want-1SG also	*kirjoitta-a* write-INF	*blogi-ssa* blog-INE
10.1	*Mitä sä halua-t* What you want-2SG	*kysy-ä?* ask-INF	
11.1	*Halua-isi-n* Want-COND-1SG	*men-nä* go-INF	**Suomii-in* *Finland-ILL

With time, Lena's *haluta* construction becomes ever more productive. Towards the end of the period of observation (weeks 24–36), the construction exhibits so much variability in terms of different forms of *haluta* (in total 8 different forms) and of its complements (in total 13 different verbs in non-finite clauses) that the [HALUTA + NFC] pattern seems to have become productive.

Apart from occurring with a non-finite clause, *haluta* may also directly be followed by a noun phrase. The development of a [HALUTA + NP] pattern starts somewhat later than the development of the [HALUTA + NFC] pattern and seems to be based on it, and the data are more restricted: Lena uses a noun phrase as a complement only four times (see Table 7) and in three of the instances (weeks 9, 11, and 26), a non-finite clause would be required to convey the intended meaning. These complements could therefore be categorized as non-finite clauses in which the verb is omitted in a non-target-like way, i.e. their target-like form would still conform to the [HALUTA + NFC] pattern that Lena has already developed at that point. These non-target-like forms seem to represent a new step in Lena's development of the use of *haluta*: while earlier inaccuracies concerned the form (phonology or orthography) only, omitting a verb relates to the abstract schema and may therefore be regarded as a different kind of non-target-like use. Lena is getting more productive, and seems to use the established [HALUTA + NFC] pattern to develop towards a [HALUTA + NP] pattern.

Continuity with her earlier development is also apparent in her re-use of the frequent first person singular conditional form of *haluta* in weeks 9 and 11 (see Table 7). It is only in week 30 that Lena finally combines *haluta* with an NP in a target-like way. This use shows creativity: in the multilingual construction *koska mä haluan insurance* 'because I want insurance', Lena's use of a non-Finnish word within the construction demonstrates that she is aware of the inner structure of the construction and is not only repeating something she has picked up from her exposure. Therefore, it could be argued that at this point Lena has finally arrived at a productive pattern of [HALUTA + NP].

Table 7
Lena's haluta construction with a noun phrase complement

Utt.No.		HALUTA		NP	
9.1		*Halua-isi-n* Want-COND-1SG	missing verb	**marjo-j-a* *berry-PL-PAR	*mutta *tarvitse* but *need *ol-la *hyvä-ä* be-INF *good-PAR *ilma* weather

11.1	*Ole-n käy-n* Be-1SG visit-1SG(PPC) **Tampere-llä … mutta* *Tampere-ADE … but	*halua-isi-n* want-COND-1SG	missing verb	**paljon *kaupungi-t *muu-ta* *lots *city-PL *other-PAR
26.1		*Halua-n* Want-1SG	missing verb	**hiihto-a* *skiing-PAR
30.1	*Koska* Because	*mä halua-n* I want-1SG		*insurance@s.* insurance@s

Tykätä

Lena's initial use of the *tykätä* construction is different from that of her *haluta* construction. Lena's utterances are more variable and the construction is semi-schematic right from the start (see representative examples in Table 8). In the first two weeks (weeks 3–4, 9 utterances), Lena uses three forms of *tykätä* (with some variation in accuracy): *tykkään* 'I like' (3 times), *en tykkää* 'I don't like' (4 times), and *tykkäätkö* 'do you like' (twice). She uses only noun phrases as complements but their use is relatively variable: in these 9 utterances, 15 different noun phrases are used. Hence, there seems to be an open slot for a noun phrase within the construction right from the start. Lena's *tykätä* construction therefore starts with the semi-schematic patterns [*tykkään* + NP], [*en tykkää* + NP], and [*tykkäätkö* + NP].

Table 8
Examples of Lena's initial use of the tykätä construction

Utt. No.	TYKÄTÄ	NP
3.1	*Ei *tykka* NEG(3SG) *like intended meaning: *E-n tykkää* NEG-1SG like	**kahvi-a-st* *coffee-PAR-ELAT
4.1	*Tykkää-t-kö* Like-2SG-Q	*pitsa-sta?* pizza-ELA
4.2	*Tykkää-n* Like-1SG	*tomaati-sta.* tomato-ELA
4.3	*E-n *tykkää-n* NEG-1SG *like-1SG	**musika-sta.* *music-ELA

The *tykätä* construction requires the elative form of the noun phrase. In weeks 3–4, Lena uses the required elative ending -sta (week 3: *-st) in virtually all cases and seems to use top-down processes when constructing the forms. In week 3, the elative ending is added to a partitive form *kahvia,* instead of to the stem *kahvi* 'coffee'(see 3.1 in Table 10). Mass nouns, such as *kahvi* 'coffee', are often used in the partitive, and it seems that Lena uses the frequently occurring partitive *kahvia* as a stem, and used a top-down process based on explicit knowledge when adding the elative ending to that form. In other words, Lena seems to

possess a generalization for the use of the elative ending: this utterance provides evidence that the *tykätä* construction is not a rote-learned unit picked up from exposure but Lena seems to know that it consists of different parts.

Other utterances produced in week 4 provide further support for this interpretation of a noun phrase complement consisting of a stem and the elative ending -sta. Besides using the noun phrase *pitsa* 'pizza' within the *tykätä* construction, Lena uses *pitsa* within two other constructions as well, and in these constructions, *pitsa* 'pizza' is declined in a case other than the elative case (see Examples 7–9).

Example 7. *Tykkää-t-kö* *pitsa-sta?*
Like-2SG-Q pizza-ELAT
Do you like pizza?

Example 8. *Mene-t-kö* *pitsa-lle* *illa-lla?*
Go-2SG-Q pizza-ALL night-ALL
Do you go for a pizza tonight?

Example 9. *Mun* *lempiruoka* *o-n* *pitsa.*
My favorite.food be-3SG pizza
My favorite food is pizza.

In week 5, when Lena begins to use non-finite clauses within the construction, she immediately uses 3 different non-finite clauses as a complement (see Table 9 for representative examples). The verbal phrase *laittaa ruokaa* 'prepare food' is repeated in weeks 8 and 10, and the verb *matkustaa* 'travel' is used twice, but otherwise non-finite clauses are used variably. It therefore seems that a non-finite clause slot opens up quite quickly. The multilingual construction *tykkään to pick marjoja* 'I like to pick berries' (10.2) and the particle *myös* 'also' (10.5) point to a more productive pattern, too. However, a non-finite clause is only used with the first person singular form, so it seems that instead of having a highly schematic pattern [TYKÄTÄ + NFC], Lena has a semi-schematic pattern [*tykkään* + NFC].

Table 9
Examples of Lena's [tykkään + NFC] pattern in weeks 5–10

	TYKÄTÄ	NFC
5.1	*Tykkää-n* Like-1SG	*laitta-a ruoka-a* make-INF food-PAR *syö-dä ja leipo-a.* eat-INF and bake-INF
8.1	*Tykkää-n* Like-1SG	*laitta-a ruoka-a* prepare-INF food-PAR *ja matkusta-a.* and travel-INF

9.1	**Tykkä-n* *Like-1SG	*laula-a kuoro-ssa.* sing-INF choir-INE
10.1	*Mä tykkää-n* I like-1SG	**laihta-a ruoka-a,* *prepare-INF food-PAR, *matkusta-a,* travel-INF, *neulo-a ja luke-a.* knit-INF and read-INF
10.2	*Tykkää-n* Like-1SG	*to pick@s marjo-j-a* to pick@s berry-PL-PAR
10.3	*Ja tykkää-n myös* And like-1SG also	*oppi-a kiel-i-ä.* learn-INF language-PL-PAR

Towards the end of the study (weeks 10-34), Lena uses 5 different forms of *tykätä* and 8 different noun phrases within the construction. Besides one noun phrase, *kahvi* 'coffee', the noun phrases used at the end of the period of observation are different from the noun phrases used at the beginning and therefore Lena's [TYKÄTÄ + NP] pattern seems to have become productive. Non-finite clauses are only used with the first person singular form so Lena seems to have developed a semi-schematic pattern of [*tykkään* + NFC].

Jungo

Haluta

Jungo's initial use of the *haluta* construction is similar to that of Lena's: Jungo too relies on the first person singular conditional form at the beginning. In weeks 4–14, *haluaisin* 'I would like to' is used four times and its negation is used once (see Table 10). However, compared to Lena, the complements within Jungo's *haluta* construction are more variable; in five utterances, five different non-finite clauses are used. Moreover, in week 8, the particle *myös* 'also' is used, pointing to a more productive pattern. While Lena's *haluta* construction starts with a mostly formulaic pattern [*haluaisin matkustaa* + NP], Jungo starts with a somewhat more productive, semi-schematic pattern of [*haluaisin* + NFC].

Table 10
Jungo's initial use of the haluta construction

Utt.No.		HALUTA	NFC	
			Verb	NP
4.1[1]		*mä halua-isi-n* I want-COND-1SG	*matkusta-a* travel-INF	*Helsinki-in, Lappi-in ja *Tampele* Helsinki-ILL, Lapland-ILL and *Tampere
7.1	Main clause *ja* and	*e-n halua-isi* NEG-1SG want-COND	*opiskel-la* study-INF	*suome-a* Finnish- PAR

8.1		*mä myös* I also *halua-isi-n* want-COND-1SG	*ol-la* be-INF	*opettaja* teacher
10.1		*mä halua-isi-n* I want-COND-1SG	*syö-dä* eat-INF	**kiinalaise-sta *luoka* *chinese-ELAT *food
14.1		*mä halua-isi-n* I want-COND-1SG	**puhu* speak	*suome-a* Finnish-PAR

[1] This is the only expression under investigation in this study that was a (partial) imitation of one of the preceding utterances of the interlocutor.

After the exclusive use of the conditional form at the start, Jungo moves towards a highly productive pattern of [HALUTA + NFC]. At the end of the period of observation (weeks 26–36), 8 different forms of the *haluta* verb, and 12 different non-finite clauses are used within the [HALUTA + NFC] pattern.

A noun phrase is used twice as a complement, both times with the third person plural form (see Table 11). Because of this use only with the third person plural form, on basis of the data available we might assume that Jungo has a semi-productive pattern [*he haluavat* +NP] 'they want +NP'. The assumption of an open slot for a noun phrase is justified by the fact that both instances are not fully target-like, showing that they are not rote-learned.

Table 11
Jungo's [HALUTA + NP] pattern

Utt.No.		HALUTA	NP
23.1	*he voivat *vaatta-a* they can-3PL *dress-INF	*he halua-vat* they want-3PL	*mikä* what
34.1	*joskus* sometimes	*he halua-vat* they want-3PL	*ihmise-t joka voi aja-a* person-PL who can drive-INF

Jungo is the only learner who uses a sub-clause as a complement of *haluta* (see Example 8). This structure is non-target-like because the linking word *että* 'that' is missing.

Example 8. *Hänen tyttöystävä ei *halua-t*
(week 20) His girlfriend NEG(3SG) *want-2SG

*hän *pelaa-n peli*
he *play-1SG game

'His girlfriend doesn't want him to play a game'

Tykätä

Jungo's initial use of the *tykätä* construction resembles that of his *haluta* construction. His use of *tykätä* also starts with two forms: *tykkään* 'I like' and *tykkäätkö* 'do you like'. Of these, *tykkään* is used more frequently (8 out of 11 utterances, weeks 2–5). In weeks 2–3, Jungo uses only noun phrases as complements. These are variable, pointing to an open slot for a

noun phrase right from the start. In other words, Jungo begins with the semi-schematic patterns [*tykkään* + NP] and [*tykkäätkö* + NP].

When constructing noun phrases, Jungo seems to use a top-down process. This is visible when a generalization, an explicitly learned pattern, *tykätä* + NP + *sta*, is applied. In week 3, Jungo writes the *-sta* ending separately from the noun phrases. This particular way of spelling indicates that the noun phrase and its ending are not a unit for him but rather are two separate parts. Also some non-target-like forms show that some expressions are not picked up as chunks but derive from a top-down process, for example, when Jungo adds a suffix to the stem of the noun without applying the required changes in the stem. This results in the non-target-like forms shown in utterances 3.2 and 7.1 in Table 12 (target-like forms: *englan**n**ista, suomalai**s**esta, kiinalai**s**esta, venäläi**s**estä*). In the noun phrases **futistasta* 'football'(2.3, Table 12) and **ruokaasta* 'food' (3.2, Table 12), Jungo used frequently occurring partitive forms (*futista* and *ruokaa*) as a stem to which the elative ending *-sta* is attached. This is similar to Lena's production of the **kahviast* 'coffee' form. In these expressions, both top-down and bottom-up processes are used: partitive forms are picked up from exposure and pasted into the NP slot within the explicitly learned pattern.

Table 12
Jungo's initial use of the tykätä construction

Utt.No.	TYKÄTÄ	NP
2.1	*Mä tykkää-n* I like-1SG	**Englanti-sta* *English-ELAT
2.2	*Tykkää-t-kö* Like-2SG-Q	**futis-ta-sta?* football-PAR-ELAT
3.2	*Minä myös tykkää-n* I also like-1SG	*koira-sta, *Kiinalainen-sta *ruokaa-sta ja *suomalainen-sta* dog-ELAT, *Chinese-ELAT *food-ELAT and *Finnish-ELAT
5.2	*Minä tykkää-n myös* I like-1SG also	*kiinalaise-sta ruua-sta, suomalaise-sta ruua-sta ja kesä-stä* Chinese-ELAT food-ELAT, Finnish-ELAT food-ELAT and summer-ELAT
7.1	*Suomalainen ei* Finnish NEG(3SG) *tykkää* like	**ruostilainensta ja *venäjäläinenstä* *Swedish-ELAT and *Russian-ELAT

Towards the end of the period of observation (weeks 10–34), Jungo uses 5 different forms of the *tykätä* verb and 17 noun phrases are used as complements. He therefore seems to have developed a highly schematic pattern [TYKÄTÄ + NP].

Regarding the [TYKÄTÄ + NFC] pattern, it seems that Jungo uses nominal forms of verbs (a type of NP) to some extent as stepping-stones towards the use of non-finite clauses. The first nominal complements are used in week 3 (see Table 15), and a non-finite clause is used for the first time in week 4. A nominal form *ruuanlaitto* 'cooking' (5.1) is used before the non-finite clause *laittaa ruokaa* 'to cook' (10.2) and similarly, the nominal form *syöminen* 'eating' (32.1) is used before the non-finite clause *syödä ruokaa* 'eat food' (33.1).

Jungo uses non-finite clauses as complements only with the first person singular form *tykkään* (6 utterances, see Table 13). Hence, like Lena, Jungo seems to develop a semi-schematic

[*tykkään* + NFC] pattern but the data do not provide evidence for a fully schematic [TYKÄTÄ + NFC] pattern. In two utterances (see Table 13, 16.2 and 20.1), it is unclear whether the complement is a noun phrase or a NFC, because the forms of the complements are non-target-like.

Table 13
Jungo's use of nominal forms of verbs, non-finite clauses and intended non-finite clauses as complements

Utt.No.	TYKÄTÄ	NFC	NP (nominal form of a verb)
3.1	*Minä tykkää-n* I like-1SG		**uima-sta, *laula-sta ja* *swimming-ELAT, *singing-ELAT and **kirja blogi-sta* *book blog-ELAT
4.2	*mä tykkää-n* I like-1SG	*katso-a tv-tä* watch-INF tv-PAR	
5.1	*Minä tykkää-n* I like-1SG	**matkusta ja* *travel and	**ruualaito-sta,* *cooking-ELAT *laulamise-sta* singing-ELAT
10.1	*mä tykkää-n* I like-1SG	**mene-e metsä-än Jyväskylä-ssä ja maljasta-a mustikka ja* *go(3SG) forest-ILL Jyväskylä-INE and pick.berries-INF blue-berry and *sieni-ä* mushroom-PL.PAR	
10.2	*mä tykkää-n* I like-1SG	**laitto-o *luoka* *prepare-INF *food	
16.1	*mä tykkää-n* I like-1SG	*men-nä metsä-än ja maljasta-a ja sienestä-ä* go-INF forest-ILL and pick.berries-INF and pick.mushrooms-INF	
16.2	*mä e-n tykkää* I NEG-1SG like		**matka bussi-lla* *trip bus-ADE
20.1	*hän *tykää* he *like(3SG)		**matku* *trip/*travel
32.1	*Ihmiset tykkää-vät* Person-PL like-3PL		**syömi-stä* *eating-ELAT
33.1	*minä tykkää-n* I like-1SG	*syö-dä ruoka-a* eat-INF food-PAR	

Alvaro

Haluta

In contrast to Lena's and Jungo's initial use of *haluta*, Alvaro uses a more productive pattern right from the start. Both the *haluta* itself and its complements show variation in the first three weeks: he uses five different forms of *haluta* (see Table 14), and six different non-finite clauses and one noun phrase as complements (see representative examples in Table 14).

Table 14
Examples of Alvaro's initial use of the haluta construction

Utt.No.		HALUTA	NFC		NP
			Verb	NP	
3.1		*Halua-n* Want-1SG	*asu-a* live-INF	**tal-la* *this-ADE	
4.1		*Halua-t-ko*	*men-nä*	**kahvi-lla*	

		want-2SG-Q	go-INF	*coffee-ADE	
4.2	*Mitä* What	*sä halua-t* you want-2SG	*juo-da?* drink-INF		
6.1		**o-n haluaa* be-3SG want(3SG)			*kahvi-a* coffee-PAR
6.2		*Halua-isi-n* want-COND-1SG	**nukka* *sleep		

Further evidence for a productive pattern is provided by the use of a non-target-like form **on haluaa* 'is want' (see Table 14, 6.1), and the use of some non-target-like past tense forms. They clearly show that Alvaro is breaking up the *haluta* verb in an attempt to express new meanings: the grammatical marker of the past tense *-i* and the personal endings *-mme* and *-n* are added to the stem *halua* (see Examples 10 and 11). Breaking up the verb like this indicates that Alvaro is aware of the different parts of the construction as well as their functions and, in general, how Finnish verbal inflections function.

Example 10. **Halua-i-mme*
Weeks 13, 18, 34 *Want-PST-1PL
We wanted

Example 11. **Halua-i-n*
Week 15 *Want-PST-1SG
I wanted

Alvaro's *haluta* construction becomes even more productive over time. At the end of the period of observation (weeks 19–36), 7 different forms of *haluta*, and 13 different non-finite clauses are used. For the [HALUTA + NP] pattern the data are more restricted: during the period of observation only three different noun phrases are used as complements, but they are all used with different forms of *haluta*. Because every construction with a noun phrase complement is different, it can be argued that this structure is productive as well. Alvaro therefore seems to have developed a productive *haluta* construction.

Tykätä

Like the *haluta* construction, Alvaro's *tykätä* construction is relatively variable right from the start in terms of both the forms of *tykätä* and its complements (see Table 15 for representative examples). However, the *tykätä* construction starts with fewer forms than *haluta*: in the first 5 weeks (13 utterances), he uses three different forms of tykätä: *tykkään* 'I like' (also **tykkän*[3]), *tykkäätkö* 'do you like' (also **tykkaatko*[4]) and **tukkäät* 'you like' (the latter ones used for questions). *Tykkään* is the most frequently used form (10 of 13 utterances) and therefore the

[3] The variability visible in the written forms is disregarded in this analysis as both forms were clearly used to express first person singular.
[4] Initially, Alvaro's pronunciation of back and front vowels was occasionally somewhere between the target-like ä/a, ö/o and y/u. Again, this minor variability was disregarded when the number of different forms were calculated, e.g. *tykkäätkö* and *tykkaatko* were categorized in the same group and considered as same form.

tykätä construction starts quite strongly with the first person singular form. Both non-finite clauses and noun phrases are used already in week 1, and in the first five weeks, in total 3 different non-finite clauses and 9 different noun phrases are used with both first and second person singular forms. Hence, Alvaro's *tykätä* construction starts off with the patterns of [*tykkään* + NP], [*tykkään* + NFC], [*tykkäätkö* + NP], [*tykkäätkö* + NFC], and *tukkäät*.

Table 15
Examples of Alvaro's initial use of the tykätä construction

Utt.No.		TYKÄTÄ	NFC	
			VERB	NP
1.1		**Tykkä-n* *Like-1SG	*opiskel (la)* study	**paivaa (na) *yliopisto (ni)* *day *university
1.2		**Tykkä-n* *Like-1SG		**kahvi, *lounas, *maito* *coffee, *lunch, *milk
2.1		**Tukkää-t?* *like-2SG		
3.1		**Tykkä-n* *Like-1SG		**musiikki-sta, elokuv-i-sta ja* *music-ELAT,movie-PL-ELA and **ruoka-lta (*ruoka-sta)* *food-ADE (*food-ELAT)
4.1	Main clause	**tykkaa-t-ko* *like-2SG-Q	**matkukusta-a ?* *travel-INF	
4.2		**tykkaa-t-ko* *like-2SG-Q		**musiikki-a ?* *music-PAR
4.3		*Tykkää-n* Like-1SG		**elokuv-i-a.* *movie-PL-PAR
5.1	Main clause, *mutta* but	*tykkää-n* like-1SG	**kuunele-sta* *listen-ELAT	**musii paljon* *music much
5.2		*Tykkää-n* like-1SG		*Pink Floydi-sta* Pink Floyd-ELAT

As indicated above, Alvaro's *tykätä* construction is semi-schematic from the beginning. The utterances produced in weeks 3 and 4 (see Table 15: 3.1, 4.2. and 4.3) provide further evidence for this interpretation. Even though some lexical material (*musiikki* 'music', *elokuvat* 'movies') is recycled, no lexical sequence is repeated, indicating that the construction is not a unit for Alvaro but that it rather consists of parts. The noun phrases within the construction are not fixed units either, because both target-like and non-target-like endings are used with the same nouns. Moreover, in week 3, Alvaro provides two alternatives for the noun phrase *ruoka* 'food', indicating his knowledge about the use of an ending within the construction. This ending should be the elative, but consonant gradation within the stem is not applied and the form therefore resembles Jungo's *englantista* noun phrase.

Over time the *tykätä* construction develops into a more productive pattern: more forms are used and slots for modifiers open up as well, since Alvaro uses the words *paljon* 'a lot', *myös* 'also'*tosi* 'very', and*parempi* 'better' within the construction. Towards the end of the period of observation (weeks 14–30), the [TYKÄTÄ + NP] pattern seems to have become productive because 4 different forms of *tykätä* (3 of them being different than the initial forms of *tykätä*),

and 11 different noun phrases are used. With the [TYKÄTÄ + NFC] pattern, the data are more restricted because Alvaro does not use the [TYKÄTÄ + NFC] pattern after the first weeks. However, in these three utterances, the non-finite clause is always different and the NFC is used twice with the first person singular and once with the second person singular interrogative form (see Table 15). Therefore, Alvaro's [TYKÄTÄ + NFC] cannot be considered as highly productive but it is more abstract than Lena's and Jungo's.

Khadiza

Haluta

Khadiza's initial use of the *haluta* construction is similar to Alvaro's: the construction originates in several forms and the use of complements is quite flexible. In the first five weeks (6 utterances), six different forms of *haluta* and four different non-finite clauses are used (see Table 16). In the two utterances produced in weeks 7 and 8 the non-finite clauses are almost identical, but in both cases the conjugation of the *haluta* verb is target-like, pointing to Khadiza's knowledge about the different communicative functions of different parts within the construction. So Khadiza begins with a semi-schematic pattern of the *haluta* construction.

Table 16
Khadiza's initial use of the haluta construction

Utt.No.		HALUTA	NFC, verb	NFC, NP
4.1	*Mihin* Where	*halua-isi-t* want-COND-2SG	*matkusta-a* travel-INF	*Suome-ssa?* Finland-INE?
5.1	Main clause, *koska* because	*he haluai* they want		
6.1		*Martin halua-isi* Martin want-COND(3SG)	**ui-ma-a* swim-3.INF-ILL	
6.2		*Martin halua-a* Martin want(3SG)	*osta-a* buy-INF	*pitsa-a* pizza-PAR
7.1	*Tulevaisuude-ssa* Future-INE	*han halua-isi* he want-COND(3SG)	*ol-la* be-INF	*opettaja ja ohjelmoija* teacher and coder
8.1	*Tulevaisuude-ssa* Future-INE	*halua-isi-n* want-COND-1SG	**ol-lan* *be-INF	*opettaja vai ohjelmoija* teacher or coder

The productivity of this construction grows over time as some new forms are used and combined with different non-finite clauses. At the end of the period of observation (weeks 34–35), 13 different non-finite clauses are used as complements. However, compared with other learners, Khadiza's *haluta* construction remains less variable in two respects. First, Khadiza does not use any noun phrases as complements. Second, at the end of the period of observation, Khadiza uses fewer different forms of *haluta* than other learners (see Table 22). Moreover, at the end of the data collection period, Khadiza is also using lexically relatively fixed units: in week 34, she uses expresses the meaning 'I want to travel to Bangladesh', with very little variation in form in total six times.

Tykätä

Khadiza's *tykätä* construction starts with two forms, *tykkäätkö* 'do you like' and *tykkään* 'I like', and both noun phrases and non-finite clauses are used as complements from early on with both forms (see Table 17 for representative examples). In other words, Khadiza's *tykätä* construction starts with the patterns [*tykkään* + NP], [*tykkään* + NFC], [*tykkäätkö* + NP], and [*tykkäätkö* + NFC]. As with Alvaro, some lexical material is recycled, but no specific lexical string is repeated, showing that the construction is not learned as a chunk but some kind of schema has already been developed (see utterances 4.5 and 4.6, and 4.8 and 4.9). The use of the particle *myös* 'also' implies too that the pattern is to some extent productive.

Table 17
Examples of Khadiza's tykätä construction in weeks 2–5

Utt. No.		NFC		NP
	TYKÄTÄ	Verb	NP	
2.1	*tykkää-t-kö* like-2SG-Q			**Suomi* *Finland
2.2	**tykkaa-t-ko*[5] *like-2SG-Q			**ruoka *suomi-n* *food *Finland-GEN
4.1	**tykkaa-t-ko* *like-2SG-Q	*leikki-a* play-INF	*las-te-n kanssa* child-PL-PAR with	
4.5	**tykkaa-t-ko* *like-2SG-Q			*liha-sta vai kala-sta* meat-ELA or fish-ELA
4.6	*mä myös *tykkaa-n* I also *like-1SG			*liha-sta* meat-ELA
4.7	**tykkaa-n* *like-1SG			*kala-sta myös *kasvi-sta *kaikke-sta* fish-ELA also *vegetable-ELA *all-ELA
4.8	**tykkaa-t-ko* *like-2SG-Q	*matkusta-a* travel-INF	**Lampi-in* *Lapland-ILL	
4.9	*mä myös *tykkaa-n* I also *like-1SG	*matkusta-a* travel-INF	**Lampi-in bussi-lla* *Lapland-ILL bus-ADE	
5.1	*Mä *tykka-n* I *like-1SG	*laitta-a* prepare-INF	**ruoka* *food	

Towards the end of the period of observation (weeks 14–24), Khadiza's [TYKÄTÄ + NP] and the [TYKÄTÄ + NFC] seems to have become productive. In these last weeks, Khadiza uses 3 different forms of the *tykätä* verb (2 of them being different than the initial forms), 7 different NPs (all different from the NPs used at the beginning), and 4 different NFCs (2 being different from the initial constructions).

[5] Similarly to Alvaro, also Khadiza's pronunciation of back and front vowels was occasionally somewhere between the target-like ä/a, ö/o and y/u. This minor variability was disregarded when the number of different forms were calculated.

Discussion

In this study, we aimed to investigate whether the development of the *haluta* 'want' and *tykätä* 'like' constructions of four Finnish L2 learners starts with lexically specific expressions and whether these initial constructions develop into more abstract patterns over time.

Our first hypothesis was that learners usually start with lexically specific constructions. This hypothesis is not supported: only Lena's *haluta* construction is initially mostly formulaic but other constructions are initially semi- or highly-schematic (see Tables 18 and 19). Table 20 illustrates the full range of constructions used by each learner in the initial phases.

Table 18
All learners' initial use of the haluta construction

Learner (weeks, number of utterances)	Number of forms of *haluta*	NFC, Number of verbs	Number of NPs	Degree of productivity	
				Haluta + NFC	Haluta + NP
Lena (1–5, 6)	2	1	0	Mostly formulaic	Not used
Jungo (4–14, 5)	2	5	0	Semi-schematic	Not used
Alvaro (3–6, 7)	5	6	1	Highly schematic	Highly schematic
Khadiza (4–8, 6)	5	4	0	Highly schematic	Not used

Table 19
All learners' initial use of the tykätä construction

Learner (weeks, number of utterances)	No. of forms of *tykätä*	NFC, No. of verbs	No. of NPs	Degree of productivity	
				Tykätä + NFC	Tykätä + NP
Lena (3–4, 9)	3	0	15	Not used	Semi- schematic
Jungo (2–5, 11)	2	2	15	Semi-schematic	Semi-schematic
Alvaro (1–5, 13)	3	3	10	Semi-schematic	Semi-schematic
Khadiza (2–4, 13)	2	3	10	Semi-schematic	Semi- schematic

Table 20
All learners' initial constructions

	Formulaic ⟷ Schematic			
	Lena's *haluta*	Jungo's *haluta*	All learners' *tykätä*	Alvaro's and Khadiza's *haluta*
Pattern(s) used	[*haluaisin matkustaa* + NP]	[*haluaisin* + NFC] *En haluaisi opiskella*	[*tykkään* + NP]$_{L,J,A,K}$ [*tykkään* + NFC] $_{J,A,K}$ [*tykkäätkö* + NP] $_{L,J,A,K}$ [*tykkäätkö* + NFC] $_{A,K}$ [*en tykkää* + NP] $_{L}$ *Tykkäät?* $_{A}$	[HALUTA + NFC] [HALUTA + NP]

These findings are in line with Roehr-Brackin (2014), who found that a learner can start with both formulaic and more abstract constructions. Lena's and Jungo's use of the rather formulaic *haluta* construction early on is consistent with Roehr-Brackin's (2014) finding regarding the *fahren* 'drive' construction, which was initially formulaic. Similar formulaic patterns have also been found by Eskildsen (2008, 2018). One possible reason for Lena's and probably also Jungo's initial use of rather formulaic expressions with the first person singular conditional form is that in week 3, the phrase '*Haluaisin matkustaa* + NP' 'I would like to travel + NP' was used frequently in a speaking exercise in class.

Roehr-Brackin (2014) also shows that it is possible for an L2 learner to start with a more productive pattern (the *gehen* 'go' construction in her study). This 'alternative learning path' (Roehr-Brackin 2014: 771) has not yet been supported in many empirical studies, but semi-schematic patterns similar to the *tykätä* constructions in this study, and highly schematic, abstract patterns like Alvaro's and Khadiza's *haluta*, have been found in L2 learners' productions in some earlier studies (besides Roehr-Brackin, 2014, see Eskildsen, 2015). These findings show that the traditional assumption that L2 learners usually start with lexically specific expressions does not hold true. One very good reason could be that adult L2 learners already have an established L1 schematic system and its constructions can be used as templates for L2 expressions (see e.g. Smiskova-Gustafsson, 2013). Instruction may also play a role, as the *tykätä* construction was taught in order to point out the communicative functions of its different parts.

Although it is assumed that schemas develop bottom-up, it has been shown that L2 learners also make use of a top-down process (Roehr-Brackin 2014; Smiskova-Gustafsson 2013; Arndt-Lappe and Baldus 2018). Some non-target-like forms in our data show that the learners' utterances are instantiations of a generalization. For example, Jungo's **englantista* 'English' form shows the clear application of an explicitly learned pattern. Jungo's **futistasta* 'football' and **ruokaasta* 'food' and Lena's **kahviast* 'coffee' show how bottom-up and top-down processes are both used. It seems that chunks picked up from exposure (constructions such as *juoda kahvia* 'to drink coffee', *pelata futista* 'to play football', *laittaa ruokaa* 'to

prepare food'; i.e. using a bottom-up process) were then pasted into an NP slot within the *tykätä* construction (using a top-down process).

We also set out to investigate whether the constructions become more abstract over time. Our second hypothesis was that initial constructions develop into more abstract patterns but that learners will show different levels of abstractness in their constructions at the end of the period of observation. This hypothesis is supported for both constructions. All constructions develop into a semi- or highly productive pattern (see Tables 21 and 22) and there are differences between the learners (see Table 23 for the continuum of abstractness of the constructions). Because free production data were used and the learners produced different numbers of utterances with the *haluta* and *tykätä* constructions in different weeks, the length of the end phase is based on the number of utterances with these constructions, not on the points of data collection.

Table 21
All learners' use of the haluta construction at the end of the period of observation

Learner (weeks, number of utterances)	Number of forms of *haluta*	NFC, Number of verbs	Number of NPs	Degree of productivity	
				Haluta + NFC	Haluta + NP
Lena (24-36, 20)	8	13	1	Highly schematic	Highly schematic[6]
Jungo (26-36, 23)	8	12	1	Highly schematic	Semi-schematic
Alvaro (19-36, 19)	7	13	2	Highly schematic	Highly schematic
Khadiza (34-35, 23)	3	13	0	Highly schematic	Not used

Table 22
All learners' use of the tykätä construction at the end of the period of observation

Learner	Number of forms of *tykätä*	NFC, Number of verbs	Number of NPs	Degree of productivity	
				Tykätä + NFC	Tykätä + NP
Lena (10-34, 20)	5	10	8	Semi-schematic	Highly schematic
Jungo (10-34, 21)	5	6	17	Semi-schematic	Highly schematic
Alvaro (14-30, 13)[7]	4	0	11	Not used	Highly schematic
Khadiza (14-24, 20)	3	4	7	Highly schematic	Highly schematic

[6] Lena's *haluta* + NP is considered as highly schematic because of code mixing, see the discussion below
[7] Alvaro's end phase does not include as many utterances as the other learners', because in total he uses fewer utterances

Table 23
All learners constructions at the end of the data collection

	Formulaic ⟷ Schematic			
Patterns used	Jungo's *haluta* + NP Lena's and Jungo's *tykätä* + NFC	Khadiza's *tykätä* +NFC	Khadiza's *haluta* + NFC	Other constructions
	[*haluavat* + NP] J [*tykkään* + NFC] L,J	[TYKÄTÄ + NFC]	[HALUTA + NFC]	[HALUTA + NFC] L,J,A [HALUTA + NP] L,A [TYKÄTÄ + NP] L,J,A,K

For the *haluta* construction, the data provide enough evidence that all learners develop a highly schematic [HALUTA + NFC] pattern (see Table 21). However, Khadiza uses fewer forms of *haluta* than the other learners and her use of non-finite clauses at data point 34 shows that an L2 learner might show very little variation in her constructions even though some degree of schematization has already taken place. Just as for proficient speakers (see Barlow 2018), prefabricated chunks play an important role in fluent L2 production. Concerning the [HALUTA + NP] pattern, the data are more restricted but there is evidence for semi- or highly schematic patterns. For Lena, the use of a multilingual construction can be seen as evidence for an existing open slot within the construction, as argued in usage-based approaches to bilingual children's code-mixing patterns (Quick et al. 2018). Jungo uses one noun phrase within the construction in the last weeks (see Table 21) but he had used another noun phrase earlier. Alvaro uses two different forms of *haluta* with two different noun phrases in the last weeks pointing to a schematic pattern.

Regarding the *tykätä* construction, all learners seem to develop a semi- or highly schematic pattern even though compared to *haluta,* fewer different forms are used. This difference does not necessarily tell us something about the difference in productivity between different constructions but rather about the differences in their use: *haluta* is a more versatile construction in terms of use, and is simply more frequent overall. The [TYKÄTÄ + NP] pattern seems to become highly abstract for all four learners. Although Lena and Khadiza use fewer different NPs than initially, these NPs are combined more variably with different forms of *tykätä*. In contrast, with [TYKÄTÄ + NFC], individual differences are more visible. Both Lena and Jungo use variable non-finite clauses only with the first person singular form. Therefore, their data do not support the idea of a fully abstract [TYKÄTÄ + NFC] pattern. This finding is consistent with Eskildsen (2008), who showed that an L2 English learner's *can* construction did not develop into a fully abstract construction but the learner's linguistic inventory consisted of interconnected utterance schemas.

As described, the four learners differ to some extent in both the initial and the later use of the *haluta* and *tykätä* constructions. Reasons for the differences in learning trajectories can be speculated upon. One individual difference is the time of residence before the study. Lena and Alvaro arrived in Finland just before the study but Jungo and Khadiza had already been in Finland for some time. The time of residence before the study presumably influences the amount of exposure before the data collection, which in turn might affect the learning

trajectories. If we assume that the earlier exposure to (and presumably use of) the language plays a role, we would expect, based on the usage-based approaches, that Alvaro and Lena are more formulaic with their constructions initially than Jungo and Khadiza are. However, our results show a more mixed picture. Even though Lena is formulaic with the *haluta* construction, she is productive with *tykätä* and Alvaro is productive with either. Jungo's *haluta* construction, in turn, is more formulaic than Alvaro's *haluta* construction is initially. In other words, it seems that the longer time of residence before the study and therefore the supposed greater amount of exposure does not explain the differences between the learners.

Another difference is the L1 of the learners, which might have enabled positive (or negative) transfer. It could be assumed that if there is a similar construction in L1, positive transfer may happen, and the learner may develop a productive construction relatively fast. Our data do not support this hypothesis, however. Lena and Alvaro who both have the want + NFC structure in their L1 (German and Spanish) develop the corresponding Finnish construction in a different way: Lena starts off with a chunk, and Alvaro with a productive pattern. In sum however, the data are too restricted to allow any firm conclusions in this respect.

Conclusion

The aim of this study was to investigate whether two verbal constructions of four beginner learners of L2 Finnish develop from lexically specific to more productive constructions over time. The finding of this study demonstrate that L2 learning (as evidenced in production) can be on specific constructions but also another kind of path is possible: some learners start with lexically-specific, formulaic expressions rooted in a specific communicative function, while the constructions used by other learners exhibit a greater number of variable instantiations initially and are therefore more productive. On the one hand, these results support the view of L2 learning as item-based (see e.g. Eskildsen 2008); on the other, they show that L2 learners may start off with a more productive and abstract pattern, as shown earlier by Roehr-Brackin (2014). The use of these more abstract patterns might be explained by the influence of already established language systems, especially the L1, and the L2 instruction. Despite these individual differences in learning trajectories, over time all learners in our study moved towards more abstract schemas, confirming the assumed usage-based learning path from more specific to more schematic patterns. We also show that for some learners, chunk-like expressions not only characterize the early stages of L2 development but are also used later on. This study has also shown that even in the early stages, L2 learners may use both bottom-up and top-down processes. This can be seen especially in the non-target-like forms used by learners, as they have not been picked up from exposure as chunks but formed by applying a pattern.

Of course this study has its limitations. When using free production data, which allowed us to investigate more or less spontaneous L2 production, a possible task effect cannot be ruled out completely: the task might have guided the learners to use some forms more frequently than others. Moreover, even though the length of residence prior to the start of the data collection did not seem to lead to principled differences in the development of our learners, a denser data collection, especially in the beginning phases of L2 development, would have given us a more

precise picture of the (possible) use of formulaic expressions. Finally, our sample size was small, which makes is difficult to draw broader conclusions. But our findings suggest something general about L2 learning mechanisms: we have shown that starting with fixed patterns might be less of a default in L2 learning that assumed from a traditional cognitive linguistic point of view.

In a further study, it would be fruitful to investigate L2 learners' construction development in more natural communication situations in different contexts. In order to investigate whether L2 learners develop abstract constructions even if "no specific lexical sequence is repeated" (Langacker, 2009: 633), we need more and denser data.

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Appendix1: **Glossing.**

ADE adessive (‘at, on’)

ALL allative (‘to’)

COND conditional

ELAT elative (‘out of’)

GEN genitive (possession)

ILL illative (‘into’)

INE inessive (‘in’)

INF infinitive

NEG negation (an auxiliary verb in Finnish)

PAR partitive (partitiveness)

PL plural

POSS possessive

PST past tense

Q interrogative

SG singular

1 1st person ending

2 2nd person ending

3 3rd person ending

3.INF 3rd infinitive (ma infinitive)

4

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