

# Supplement S1

## Full Narratives

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### Dan's Narrative

#### *Grinding Turkish*

I can't say I was particularly excited about Turkish or Duolingo when this all started. Turkish was a curiosity for me- I knew a couple things about the language. It's a textbook example of an agglutinative language. SOV, too, like the only second language I'm any good at, Korean. I knew a couple Turks from graduate school in the US, but had never picked up anything. Duolingo, though, I was familiar with. Years ago I had tried it out briefly in a half-hearted attempt to brush up on my high school German. I hadn't been too impressed.

The first week, in late January, went by quickly. I completed four "skills" (suites of a few short lessons on a given topic) and reviewed a couple of them. I really had only managed to learn a couple greetings, some pronouns, *eat* and *drink*, and a smattering of other vocabulary. Discovering cognates felt like winning. SOV sentence order was no problem, coming from L2 Korean. Overall, though, I felt lost. The Duolingo platform and interface presented some obstacles right off the bat, which didn't help. The sole Turkish voice I heard sounded garbled. No doubt this had to do with my weak listening abilities, but something just seemed off about the sound quality. Sentences sounded awkwardly stitched together from isolated words at times. From the start, I caught myself relying on mouse-overs to get translations and quickly work through exercises. 10 to 25 minute sessions in the evenings before bed.

I quickly hit a stride with Duolingo over the next couple of weeks, investing a good couple of hours a week and building my first streak. During this time, I got quicker with mouse-over assisted translations and completed many of the beginner skills. I was happy to find more cognates and create mnemonics for other words (such as connecting the word for lion, *aslan*, to *The Chronicles of Narnia*). I was able to make it through topics like Possessives and Occupations, but I quickly realized that my retention of the material wasn't very good- it was incredibly difficult for me to recollect what, specifically, I had learned at the end of each week. So I started a habit of beginning my Duolingo sessions with reviews; this would prove to be a habit that I would largely stick with for the entirety of my Duolingo experience. Although I was productive in terms of completing materials and setting up good habits, frustration also seeped into my study. I began to find the whole format quite tedious and lacking variety. Peculiar requirements for English translations drove me up a wall (such as requiring a definite article in English when translating an accusative-marked Turkish word). Real life began affecting my experience, too: my semester was ramping up, and finding time for Duolingo, not to mention energy or enthusiasm, was more and more of a challenge.

I continued to progress through the skill tree, earning lots of lingots (Duo's currency). With more and more skills completed, maintaining full bars for all of them became a larger task and more of a chore. Around this time, I also decided to follow my classmates on Duolingo. This created competition by displaying how much experience points each person had accumulated each week, which I liked- now I had a short-term goal. The (lapsed) gamer in me definitely wanted to "win" this. I continued to optimize my strategies for getting through exercises- process of elimination and scanning for key words in multiple choice items, focusing on subject verb agreements for fill in the blank, looking for mechanics cues (i.e., capital letters) in sentence scrambles, and so on. But being busy made it hard to win.

After a month or so, or about 10 hours into my studies, I was curious to see how much I had learned, so I took a Progress Test. The test had largely the same format as regular exercises, but no listen-and-repeat speaking and no feedback. I got a 0.62/5.00; I had no idea what that meant. I started to notice that reviews of early skills were getting easier for me, even if I lacked confidence.

Around this time, a tension in my Duolingo use had fully formed: I didn't want to lose the weekly xp total or lose my personal streak, but my real-world schedule required me to minimize time spent tapping/clicking my way through repetitive grammar exercises in a language that had minimal relevance for me. Absurd sentences like 'The duck speaks Italian' only affirmed the lack of relevance, although the occasional *Game of Thrones* and *James Bond* references brought much needed chuckles. In terms of anything really meaningful, though, only flashes of Turkish in my social media feeds resonated with me. On International Women's Day, I recognized *Kadin* several times in posts from former classmates. After a bombing tragedy in Ankara, I was able to read *Ankara'da herkes iyi mi?* ('Is everyone okay in Ankara?'), posted by a Turkish former classmate studying in the U.S.

Just before Spring Break, I discovered a function in Duolingo that I enthusiastically exploited in my quest for optimization and winning: the Timed Practice function. It costed 10 lingots, and I was rolling in lingots at this point, so I figured I would try it once... and it turned out, the 10 lingots was a one-time fee; I could now do timed reviews whenever I pleased. The thing about timed reviews is that instead of getting 10 xp per lesson, you get 1 xp for each exercise you get right. In other words, if I aced a lesson, I earned 20xp, and this might only take me 5 minutes. I could now grind 100+ xp in around 25-30 minutes with a little luck. I got faster at using mouseovers to assist in translations, and really relied on the listen-and-repeat exercises on the computer, which because Turkish is alphabetic and not completely dissimilar to English phonology I could get through with relative ease. I also felt that the time pressure was giving me a bit of a better read on what I actually knew versus what I could only slowly piece through and guess- I did fail timed practices occasionally. I was now able to pretty consistently make one of the top slots on the leaderboard every week.

As Spring Break rolled around, a short trip to Chicago with my wife ended my first streak. I wasn't too discouraged, because the Timed Practice was fresh and an optimal means of maintaining a streak and staying competitive in the weekly xp tally. After getting back in town, I started up a new streak. Even on days when I really had no time or patience for Duolingo, I could keep my streak going and rack up 30+ xp within 10-15 minutes- a small sacrifice of time.

Although I was successful building up a new streak, earning lots of lingots, gaining levels (like in a role-playing video game, you "level up" after accumulating enough xp; I was around level 9 or 10 at this time), and competing each week on the leaderboard, I also got progressively busier as the semester went on. I became less engaged with learning the language; my focus had shifted to grinding- grinding time, grinding points. I started to count down the hours until reaching the goal of 34 hours.

This pattern continued until late March. Around that time, the group decided we should aim to complete the tree at least up to Past; this gave me a new goal. I beelined for completing Past, and trying to keep up with reviews. I was able to do this fairly quickly, and felt pretty good about reaching that milestone. I had also hit level 11 around this time, and was still doing well on the leaderboard.

In the beginning of April, I lost my streak. This came at a time where I was really busy, overwhelmed in real-life. It also came around a time when a few classmates and I had chatted about our Turkish progress- the feeling of not having learned much was apparently pretty common. I realized that I couldn't count past five, and I still relied on mouseovers for common phrases like "Nice to meet you" and "good luck!" My progress, which was mostly expressed in terms of levels and xp, felt illusory. I stopped caring about winning; the gamer in me who wanted to optimize xp grinding was done. I set two new goals: 1) review everything, especially early material, extensively and 2) grind through to 34 hours by the time of our final exam. These goals were a compromise between my desire to actually learn something and do well on the final, and my frustration with the Duolingo experience; I would buckle-down and hopefully go out with a

bang. I took a slower pace each time I sat down to study, and did not go much further down the skill tree. It was still repetitive, frustrating at times, and filled with absurd sentences, but I was making it work.

Finally, my time studying Turkish came to a close. On my last day of study, in mid-April, I crammed for 1 hour and 15 minutes. I went back to some timed reviews, targeting early topics that I imagined I would be pretty shaky on due to not having reviewed them in a while. I took the Progress Test again, and got a 1.78/5.00- a fairly large improvement over the score I got in February, though I still wasn't sure what the score meant. With my remaining time, I did some untimed reviews, and noted that I struggled with basic things like translating "They eat an egg" into Turkish. This didn't exactly instill a lot of confidence going into the final exam on the next day.

The exam was humbling. My expectations were low going in, but in some ways the exam didn't go as bad as I thought it would. I've always considered myself a fairly good test taker, and just like how I found ways to game the exercises in Duolingo, I attempted to use strategy where my Turkish knowledge was insufficient. I definitely *wanted* to do well, and if I'm being honest, I wanted to get the highest score in the group. I ended up scoring 64.3/100, narrowly failing a Turkish 101 course, but I actually felt pleased with the score. The test itself, with meaning-oriented listening, reading, speaking, and writing, was actually interesting and motivating. It was refreshing to hear Turkish in person, and read something that was coherent over consecutive sentences. In a world where I had more free time and access to meaningful text and communication opportunities, the idea of continuing to learn Turkish didn't sound so bad. But in this world, I was done- no more Turkish on Duolingo for me.

## Hima's Narrative

### *Hima\_Narrative*

I started learning Turkish as my fifth language as part of my class project in late January, 2016. I was mainly motivated to learn a new language on Duolingo because this was the first time I had ever been exposed to computer assisted language learning and I wanted to add a new language in my foreign language repertoire. I was determined to spend at least an hour a week on Duolingo and it started off very well. In the first week, I learned some nouns and verbs along with some exponents of greetings, farewell and so on. When I figured out that Turkish was an SOV language, I thought it would be easy for me since my first language, i. e., Nepali has the SOV word order. However, when the time passed, I realized that the similar word order was not sufficient to learn a new language. English, my second language would always interfere while translating the Turkish sentences into English and vice versa. Except for the times when I was conscious of this phenomenon, I would commit errors by translating the Turkish word order into SVO pattern.

The feeling of learning a new language had given me some sense of power as a graduate student in the second language studies program because I was myself experiencing the processes of language learning in an instructed setting. My motivation level was still heightened for a couple more subsequent weeks. During this time, I figured out that there were some words in Turkish that were similar to my second language Hindi such as *kitap* for 'book'; *sarap* for 'wine'; *baba* for 'father'; *dushman* for 'enemy' and so on. On the one hand, I was happy due to the fact that I could learn Turkish anytime according to my convenience. On the other hand, there was gradual decrease in my motivation level due to several reasons. One of the reasons was the same pattern in which Duolingo presented the input. There would be some pictures associated with some new words many of which were not very clear. First, some words and sentences would be provided which I had to translate into English. Then, all I had to do was translate sentences from and to Turkish, listen to automated sentences and type them correctly, and choose correct answers from multiple choice questions. The same pattern of presentation of all the lessons turned out to be boring to me after week 4. For a couple of weeks in the beginning, I spent some minutes at least three days a week to cover at least an hour a week target. The daily Turkish reminders in my email inbox

reminded me of my initial motivation. However, after the fourth or fifth week, I started postponing learning Turkish on Duolingo and would do that sometime towards the end of the week so that I could update my weekly journals.

I had started taking notes of the words and new grammatical structures from the very beginning of my Turkish lessons. However, I did not separate and organize them as vocabulary items, and grammatical structures. All I did was made notes of the Turkish sentences provided on Duolingo with their English translations so that I could review them before responding to questions during the practice. The general pattern of lesson presentation was that some sentences in Turkish would be provided and I had to translate them into English. The sentences would consist of some already learned words and some newly introduced words. Then, the same set of sentences would be presented until I responded to each sentence correctly. Therefore, once the same sentences started reappearing, I would read my notes for about five minutes and then proceed until I finished the lessons. After about six weeks, all I wanted to do was to move on to the skills tree because I had to pass almost four checkpoints in the whole of the Turkish lessons before the test.

From the very beginning, I had hard time comprehending the automated speech on Duolingo. I used to listen to the words and sentences multiple times in almost all lessons for about three or four weeks. However, it did not help me grasp the phonological features and assimilations in the sentences spoken. Despite the difficulties in pronunciation, I continued moving forward to the new lessons as I was earning a lot of Lingots and was also increasing my XPs. I did not quite understand how this XP was working because I would get 10 XPs after each lesson but after I followed some of my friends, I could see that they were increasing their XPs not only in the numbers of tens but also in some odd numbers. I always wondered how this was working but never got to know it. Since I was not very fond of computer games, I was kind of just taking this process as a routinized practice of going through lessons and reaching to the level where I had to be at the time of test. The overall distribution of time in learning Turkish for me was quite asymmetrical since I spent only an hour and some minutes for some early weeks and more than two hours in the last weeks in April.

Although I had set up my mind to reach the 34-hour target by spending at least 2 hours a week from January to April, I could not match up that target due to the decrease in my motivation level and also due to my other responsibilities related to my graduate school and personal parental roles. When I started my lessons, I used to read the “tips and notes” given in the beginning of each new set of lessons. However, I occasionally read them in the later weeks because although I am fond of explicit rules, I wanted to figure out the rules from the example sentences presented in the lessons on my own. Gradually, I started matching the rules I would induce with the rules given in the beginning of the lessons and I still preferred to go with my own learning of the rules instead of reading the tips provided by Duolingo. I did this until the last days of my Duolingo practice in April.

Throughout my Turkish learning on Duolingo, what I found interesting was Duolingo’s presentation of some strange sentences in the middle of the lessons. They would be grammatical but inappropriate. For example, *Mor bir balak yerim* (“I eat a purple fish”), *Baykus su icer* (“Owl drinks water”), etc. Such sentences always reminded me of the fact that I was learning the language in a computerized setting and not in a natural setting because people in real life would not be producing such nonsensical sentences. I kind of took a break from Duolingo for about 6 days during the spring break but on the seventh day, I learned a couple lessons so that I could keep up with the weekly journal keeping track.

Although the medium of instruction on Duolingo was English, my second language, I realized from the very beginning that I would resort to Nepali, my first language whenever I had to think of some words for example, the color terms, numbers, clothes, and food items. I tried to memorize the Turkish words by making some connections with their equivalent terms in Nepali. For example, I associated the Turkish color word *mavi* (‘blue’) with the Nepali word *neelo* by associating it with the color of my secondary school building which was blue. The meaning of *mavi* in Nepali is similar to the meaning of ‘secondary school’. I kind of started using some strategies in memorizing the meaning of vocabulary items. However, the

unlimited number of inflections that could be used in the content words in Turkish made it impossible to remember the meanings of the words with different inflections to represent different grammatical concepts. Similarly, I figured out that the new words that were introduced in each lesson were presented in different color, mostly yellow, that prompted me to draw the mouse over those words, see their meanings and figure out the meanings of entire sentences. That saved me a lot of time. I felt bad for doing this as this strategy was not helping me learn and remember the words but was helping me complete the lessons in shorter time.

Although I continued making notes in all the later weeks, I stopped reviewing my lessons. I just wanted to finish a particular lesson and move ahead. At times, I wondered why I was so demotivated in learning Turkish on Duolingo. This might be because as a language teacher, I was exposed to a lot of teaching techniques and activities to teach different aspects of language. I had expected that Duolingo would make use of at least some of the activities but the only and the same routinized practice and input was enough for me to have a thought of giving up at some point. I spent more time on Duolingo during the first two weeks in April than any week before because I wanted to finish the target lesson, i.e., past tense to prepare myself for the test which I could do eventually. In the last week, i.e., the beginning of the third week in April, I kind of crammed for about an hour for the test by skimming over my notes and trying to remember the connections I had made to memorize the vocabulary items although I could not finish everything in an hour. I had felt as if I was ready for the test although I was a bit skeptic about my ability in listening and speaking sections of the test. The test was not as overwhelming as I had thought but I could not perform very well as I had limited number of content words in my memory and the test consisted of a lot of new verbs that needed to be inflected for tense, and nouns that had to be inflected for different grammatical categories such as number, person, possessive, and so on. I felt that I did not do well in the listening and speaking sections as I had expected and also because I always had problems with these two skills on Duolingo.

Since I spent about twenty-two hours on Duolingo in total, I still have to learn for twelve more hours to reach the thirty-four-hour target. I am continuing this only after my semester is over and most probably during the summer. I still want to continue learning Turkish but maybe not on Duolingo since I have no more enthusiasm to go through the same boring routines and patterns on Duolingo.

### **Rachelle's Narrative**

When I first began, I was excited about learning a new language but if I'd been given the choice, I probably wouldn't have chosen Turkish. I don't know any Turks and I'd been to Turkey once for a 19-hour layover but didn't have any plans to go back unless the opportunity presented itself. I had never used Duolingo before but I love finding new resources for language learning. I immediately looked to see if Duolingo also offered Korean, which would have been great if it did since my husband is Korean and I need to freshen up on my Korean to speak with my in-laws.

I first started out using the computer version and it reminded me a bit of Rosetta Stone (that I had used for several weeks learning Korean till my computer crashed and I lost the program) with the pictures and the pronunciation tools. I knew right away that I would need a notebook and from the very first lesson, I was ready with my notebook and began writing down phrases, vocabulary words, and notes to myself. I had expected that the pronunciation would be computerized but I was still quite disappointed when I heard the stilted robotic voice. I questioned throughout the whole learning experience whether the pronunciation and intonation of the "Duolingo lady" was correct and wished that I could use other resources to check not only my own pronunciation but my perceived reception of the Duolingo pronunciation.

By the third week, I had advanced enough that I could start reviewing more on Duolingo itself, although I had been using my notes to do my own review and continued to use both the "Strengthen skills"

tool and my own notes to review what I had already learned. By that time, I had already rewritten my notes three times. As I advanced through the lessons, I began to make categories for each new vocabulary word and phrase I learned. I had already started a "Vocabulary" section, "Phrases", and "Grammar". If my notes got too jumbled, I would rewrite and reorganize them to my satisfaction to help me reorganize my thoughts and it served as a great way to review as well.

From the very beginning, I started to make connections and comparisons between my L1, L2s, and Turkish. I noticed that Turkish was a SOV like Korean and that it had different verb endings for each personal pronoun like French. I tended to make more connections with French than anything else, probably because French is the L2 that I am most familiar with and until I took LLT 846, I had been more comfortable using metalinguistic terms in French than English. When I really struggled with pronunciation, I tried as best as I could to write what I heard in Korean characters since it has a phonetic alphabet. I did this throughout my notebook, all while wishing for a Turkish alphabet guide, especially for the letters that had accents that I had never seen in any of my previous L2s.

As we briefly discussed how the Duolingo project was going after class, I began to realize that I was probably one of the few that was doing all of my studying all at once. I put it on my weekly checklist and especially during the first half, would study at the last minute on Sunday because it felt like a chore that needed to be checked off. I thought that I should try to spread my time throughout the week and try to do a little every day and keep a streak going but that never happened. But I didn't feel like I was taking it seriously enough if I did that. I would always have to get my notebook out and it was just easier to set aside a whole hour at a time to study rather than smaller increments of time. With the amount of notes I was taking, it was hard to do a little at a time. And most of the time, I felt that I needed to do an extensive review before I could begin a new lesson. For almost every study session, I would first strengthen all my bars, reviewing my notes as I went along, writing more notes to myself, and then finally, when I felt like I had mastered what I had already learned, then I would move onto something new. This sometimes would take up a good 20 to 30 minutes of my study time.

I downloaded the app during the fourth week and never looked back. I never used the computer version again, just because the app was so much easier to access on the go and I have my phone with me at all times. It especially came in handy during spring break when I was travelling, either sitting in the airport or when I was in Kenya visiting my parents. I didn't always have Internet but my phone got 4G data almost anywhere in Kenya so I was able to use Duolingo with no problems. That week I studied for 2 hours straight for the first time (and last) because I was in the car for almost 12 hours travelling Kenya cross-country and what else is there to do? I tried to take notes but the road we were on at the time was so bumpy that I gave up. I didn't get to take notes on the new vocabulary, food and the accusative. When I got back to the States and picked up Duolingo the next week, I got so frustrated because I had not written any of the food vocabulary or accusative notes down. I was getting answers wrong and I hated it. I felt like I hadn't learned anything the previous week, other than that the words looked familiar and I remembered most of the food vocabulary but had no clue regarding the accusative. So I started taking notes again, spending a big chunk of time on the accusative, creating a chart to figure out what suffix worked where. I finally figured it out and felt like I could go on with the other lessons after that.

At the beginning, in the first 5 weeks, I spent way too much time on pronunciation. For each screen that came up with a word or phrase, I would press the audio over and over again. I would click on each word in a phrase, repeating after the audio, then go back and repeat the entire phrase. When I was in the car in Kenya with 4 other people in the car, I realized how annoying and tedious it was. Then, after hearing in 841 about others' approach to Duolingo, I thought I should try to lay off my obsession with the pronunciation. It was annoying me anyway because I had no idea if the Duolingo lady's pronunciation was right or way off.

I would hear how far advanced the others were getting and I checked the leaderboard but after that I only allowed myself to check the leaderboard a few times throughout the semester. I knew I was probably

way behind and I knew I wasn't putting in as many hours as everyone else so I didn't want to compare myself to others. I knew that I had a different approach, taking extensive notes and sitting down to study for large chunks of time rather than trying to chip away at it a little at a time. I questioned my method but decided to continue to do what worked for me.

As I got to the accusative lessons and then kept advancing, I started finding more and more things that frustrated me about the Duolingo format. I was annoyed that Duolingo didn't provide any explicit explanations other than the "tips or hints", which I could not see on the mobile app. I didn't discover or utilize the discussion board on the mobile version till later in the semester. I started to get super frustrated with the grammar-translation method. I wanted some actual practice rather than clicking through screens and translating everything back and forth.

Things started to get more difficult when I started making more phrases. I got excited when I could make associations between Turkish and my L2s or something else. I connected *portakal* with the movie, *My Big Fat Greek Wedding* and then *aslan* with the *Chronicles of Narnia*. Then, when I got to the occupations, I was relieved to learn some more vocabulary that I could easily memorize. I needed a break from all the grammar with *to be*, the accusative, and the dative. Those were driving me crazy with the different suffixes that changed depending on the phonetic environment. There were several cognates between the occupation vocabulary and French, which was cool.

Then, we started talking about the exam. That made me super nervous. I felt really lost and wished I had spent more time studying and advancing throughout the semester. I felt like what I knew, I knew well but I only knew 4ish verbs and hadn't learned numbers yet. I was really intimidated by the exam we took and it just felt like I had learned nothing. I questioned whether Duolingo would really help me with Turkish in the real world. But then I got 1 out of 5 on the progress test. I don't know what that means but it made me feel better that I could at least get something in the format that I was used to.