ZOOMING INTO THE L2 SPEECH FLUENCY MARKERS OF ANXIOUS AND NON-ANXIOUS ADVANCED L2 LEARNERS – AN EXTREME CASE SAMPLING REPORT

MAGDALENA SZYSZKA
University of Turku, Finland
University of Opole, Poland
mszyszka@uni.opole.pl

PEKKA LINTUNEN
University of Turku, Finland
pekka.lintunen@utu.fi

Abstract
The study examines selected temporal markers of L2 utterance fluency in the speech of advanced L2 learners who exhibit high (HLA) and low (LLA) language anxiety levels. Out of the pool of 59 participants, six HLA and six LLA individuals were selected for an in-depth analysis on the basis of their scores on the Foreign Language Classroom Anxiety Scale (the FLCAS) (Horwitz, Horwitz, & Cope, 1986). Speech samples from a monologue task were examined for selected L2 utterance fluency measures: filled (FP) and silent pause (SP) frequency, mean length of silent pause (MLSP), articulation rate (AR), speech rate (SR), and mean length of run (MLR). The results provided insights into the L2 speech fluency profiles of anxious and non-anxious individuals. The analysis disclosed relatively higher frequency and disparate application of FPs, slower speed of speech, and more varied profiles in MLR in the HLA group as compared to the LLA group. The findings yield pedagogical and methodological implications.

Keywords: language anxiety, L2 speech fluency, L2 utterance fluency

1. Introduction[1]

Language anxiety (LA) has attracted a number of scholars interested in how this negative emotion affects second and foreign (L2) language learning processes (MacIntyre, 2017; MacIntyre & Wang, 2020). The empirical evidence collected

---

so far generally supports the claim that LA is inversely related to L2 learning outcomes (Botes et al., 2020; Gknou et al., 2017; Teimouri et al., 2018; Zhang, 2019) and L2 speaking performance (Phillips, 1992; Satar & Ozdener, 2008; Tóth, 2012). Nevertheless, investigations into more detailed processes, underlying success in L2 oral performance, such as L2 speech fluency, and their relationships with LA are less extensively documented. Only more recently have scholars been attracted to a better understanding of the interplay between LA and L2 speech fluency dimensions (Aubrey, 2022; Bielak, 2022; Peltonen et al., in review; Pérez Castillejo, 2019; Simard et al., 2023; Szyszka et al., in review; Zuniga & Simard, 2022). Yet, these pioneering investigations produced mixed results. They also followed disparate methodological approaches, making the study results difficult to compare and generalize; but, on the other hand, they provided valuable insights from a number of perspectives. Definitely, this study area is still in its infancy and calls for further explorations to grasp the complex intricacies that explain connections between LA and L2 speech fluency.

To meet this end, the present study aims to fill the gap in research by scrutinizing in detail the L2 speech fluency profiles of advanced L2 learners who exhibit either high or low levels of LA. More specifically, the aim of the study is to explore L2 speed and breakdown fluency patterns of anxious and non-anxious advanced L2 learners in search of similarities and differences. The research approach followed in this investigation is extreme case sampling (Dörnyei, 2010, p. 128), which involves the selection of the most extreme cases in a sample with the purpose of performing an in-depth analysis. Similar methodology has been followed in a number of studies on L2 speech fluency (e.g., Ejzenberg, 2000; Peltonen & Lintunen, 2016); however, to the best of our knowledge, none of them placed LA as an affective component of an L2 speaker in the limelight. Generally, this study responds to the recent call for enquiries contributing to the understanding of complex relationship between affective dimensions of an L2 learner and their L2 speech (cf. Lintunen et al., 2020; Simard et al., 2023).

2. Theoretical framework of L2 speech fluency and language anxiety

Fluency is a multi-faceted construct that has recently been defined from four different perspectives (Tavakoli & Hunter, 2018). First, in a 'very broad sense' it involves the overall language proficiency. Next, in the 'broad meaning' fluency is constricted to overall speaking proficiency, whereas in the 'narrow sense' it is depicted as the ease, flow and continuity of speech, often contrasted with accuracy and complexity. Finally, in the 'very narrow' understanding, fluency is a "rapid, smooth, accurate, lucid, and efficient translation of thought or communicative intention under the temporal constraints of on-line processing" (Lennon, 2000, p. 26). This definition, followed in the current study, highlights the role of temporal markers as useful measuring tools in investigations into speech echoing

to a degree linguistic processing. It is also in line with an influential fluency framework, proposed by Segalowitz (2010), who identifies three dimensions of fluency: cognitive fluency, utterance fluency and perceived fluency.

Within Segalowitz's (2010) framework, cognitive fluency refers to the efficiency of the underlying cognitive processes that take place during the act of speaking. Utterance fluency involves measurable manifestations of these cognitive processes in the form of speech, and perceived fluency is associated with subjective listener's perceptions of speech. If we compare this tripartite framework to an iceberg, cognitive fluency is the hidden part below the surface, difficult to observe and measure, but massive and, to a large extent, under-explored. The visible chunk of the iceberg floating above the surface – utterance fluency – rooted in cognitive fluency, is easier to measure and has been explored to a larger degree than the undersurface area. Perceived fluency, in turn, takes the stance of an observer of the iceberg, evaluating the visible part from a subjective perspective.

The current research involves an examination of temporal indices of L2 utterance fluency, which are subsumed within Skehan's (2009) tripartite L2 speech fluency framework, categorizing L2 speech fluency measures into speed, breakdown and repair fluency. The first group refers to how fast or slow the utterances are produced. The second, breakdown fluency, provides evidence for pausing behaviour, its frequency, duration and location. Finally, repair fluency measures entail examining such phenomena as false starts, repetitions, replacements and reformulations. Although these indices help disclose only the tip of the iceberg, utterance fluency investigations provide valuable data for understanding the underlying processes of cognitive fluency.

Following De Bot's (1992) adaptation of Levelt's (1989) speech production model, it is at the cognitive level that an L2 speaker conceptualizes, encodes and formulates oral performance, and the efficiency of these cognitive processes determine L2 cognitive fluency, manifested to a degree in L2 utterance fluency. The efficiency of these processes, however, may be inhibited by high levels of anxiety (Derakshan & Eysenck, 2009; Eysenck et al., 2007). The Attentional Control Model (Eysenck et al., 2007) explains the mechanisms of how the cognitive aspect of anxiety – worry – diminishes cognitive efficiency by shifting attentional resources from the task-relevant to task-irrelevant thoughts. Therefore, we expect somewhat different profiles of L2 speech fluency, operationalized here as L2 utterance fluency measured with temporal indices, in the groups of anxious and non-anxious advanced L2 learners performing a monologue task.

LA is frequently defined as "a distinct complex of self-perceptions, beliefs, feelings, and behaviours related to classroom language learning and arising from the uniqueness of the language learning process" (Horwitz et al., 1986, p. 128). This affective dimension occurs in the context of language learning and language use; therefore, it has frequently been referred to as situation-specific language

anxiety. As such, LA has been researched from two perspectives (MacIntyre, 2017): within the Specialised Approach, LA is viewed as a negative emotion solidified in time due to recurring experiences of L2 learning and use, whereas the Dynamic Approach perceives LA as an emotion that is more transient and changeable on a moment-to-moment basis due to a number of intervening variables. For the purposes of the current study, LA has been operationalized as a relatively stable situation-specific negative emotion triggered by L2 learning and use. However, a more transient, Task-specific LA has been controlled as well.

Research has provided a bulk of evidence regarding factors related to L2 fluency, which include general L2 proficiency (e.g., Kormos & Dénes, 2004), L1 fluency patterns (e.g., Derwing et al., 2009), and other user-external and user-internal variables (e.g., Lintunen et al., 2020, p. 227). Of all the factors, the last group, comprising affective characteristics of L2 learners, such as language anxiety, has been less extensively studied within the L2 fluency framework. Nevertheless, the existent research generally reports weak to moderate correlations between levels of LA and overall speech performance reflecting the broad sense of fluency (Phillips, 1992; Satar & Ozdener, 2008; Tóth, 2012). However, how this affective factor is related to L2 speech fluency in its very narrow sense is not well understood. Scarce studies in this area report mixed results (Aubrey, 2022; Bielak, 2022; Pérez Castillejo, 2019; Simard et al., 2023; Szyszka et al., in review).

In Pérez Castillejo's (2019) study LA, measured with the Foreign Language Classroom Anxiety Scale[2] (the FLCAS; Horwitz et al., 1986), was negatively related to two breakdown fluency indices: ratio of mid-AS pauses (filled and unfilled pauses within syntactic units divided by the pruned number of syllables), and the mean length of filled and unfilled pauses between AS-units, as well as positively correlated with two speed fluency measures: the mean length of run (MLR) and phonation time ratio (PTR). Additionally, significant differences in speech rate (SR), articulation rate (AR) and frequency of filled pauses between anxious and non-anxious participants performing a monologue task were identified in the quantitative study of Szyszka et al. (in review). In a similar vein, Simard et al. (2023) found a negative relationship between SR and LA. In a case study, Aubrey (2022) reported that the fluctuations of LA were weakly to moderately connected with the duration of silent pauses in the speech of three out of four participants. A different perspective on LA was proposed by Bielak (2022), who combined LA with the performance of a group task and a monologue task. He measured utterance fluency with MLR, AR, PTR, frequency of filled and unfilled pauses between and within syntactic units divided by the pruned number of syllables (end-AS ratio and mid-AS ratio, respectively), duration of AS-unit

---

[2] Pérez Castillejo (2019) interpreted the FLCAS scores in the way that lower scores indicated higher LA levels. This interpretation is in contrast to most other and the current study, where higher scores on the FLCAS mean higher levels of LA.

boundary and mid-AS-unit pauses. LA experienced while performing a collaborative task was negatively correlated with MLR, AR, and positively with end-AS ratio, and mid-AS ratio, whereas LA associated with the performance of a monologue task was negatively related only to MLR.

In contrast, Kormos and Préfontaine (2017) did not reveal any significant connections between LA related to three monologue task types and pause frequency (PF), average pause time (APT) and articulation rate (AR). Their qualitative results, however, provided tentative evidence for a relationship between L2 speech fluency and the appraisals of LA related to a task type. Generally, research into how LA and L2 speech fluency interplay has applied a number of methodologies, with promising outcomes, but, at the same time, leaving several questions unanswered. Therefore, further explorations are needed to understand how L2 learners' intricate affective states interplay with their L2 speech fluency markers which, to a degree, reflect the underlying cognitive processes. This study intends to provide more insights to the existent research findings by analyzing L2 speech fluency of individuals in a case study format that has rarely been approached in this area (but see Aubrey, 2022).

3. Method

The current study aims to produce findings, complementary to the existent research results, from a zoomed-in perspective of a selected number of advanced L2 learners whose LA levels differ considerably, following the extreme case sampling method (Dörnyei, 2010, p. 128). Task-specific LA and L2 speech fluency indices of anxious and non-anxious participants are scrutinized to respond to the following research questions:

RQ1: What are the levels and reasons for transient Task-specific LA experienced while performing a monologue task in the groups of generally anxious and non-anxious L2 learners?

RQ2: Are there any differences in L2 speech fluency regarding speed and breakdown markers in the groups of anxious and non-anxious advanced L2 learners performing a monologue task?

3.1 Language anxiety measures

The FLCAS (Horwitz et al., 1986), a widely used and reliable instrument measuring a relatively stable LA predisposition, was applied to identify general LA levels in the group of 59 advanced L2 learners and select individuals with the 10% top and bottom scores. The procedure was inspired by Tóth (2017), who used the FLCAS to choose high- and low-anxious learners for the analysis. The instrument consisted of 33 items, to which the participants responded on a 5-point Likert scale, from 1 – *I totally disagree* to 5 – *I totally agree*. The scores

can range from 33 to 165. Cronbach alpha coefficient for this instrument reached .91, indicating high reliability. Additionally, the Post-Session Survey on Anxiety (the PSSA), the instrument measuring more transient states of LA, was used to address Task-specific LA experienced during the monologue task performance. The PSSA consisted of two closed- (1. *How anxious were you while performing the monologue task in English?* and the key reversed 2. *How comfortable were you while speaking English in the monologue task today?*) and one open-ended questions (3. *What factors impinged on your anxiety in this session?*), regarding LA while performing the task and factors that impinged on LA in the recording session. The responses to the closed-ended items were marked on a 5-point Likert scale, on which the scores can range between 2 and 10. This tool was intended to complement the FLCAS data; however, due to its narrower scale and mixed character in terms of incorporating both quantitative and qualitative items, it was not used for assigning the participants to the HLA and LLA groups. In both instruments higher scores indicated higher levels of LA.

3.2 L2 speech fluency measures and task description

For the analysis of L2 speech fluency, measures were selected based on the previous research in this area to sustain comparability and target the indices that are reliable indicators of L2 utterance fluency (cf. Skehan, 2009; Tavakoli & Skehan, 2005; Kormos & Dénes, 2004, Peltonen, 2020). Frequency measures were standardized and reported in minutes, following De Jong's (2016) recommendation. Hence, the breakdown or pausing fluency measures included the number of filled pauses per speaking time in minutes (FP frequency), number of silent pauses of longer than .25 seconds (De Jong & Wempe, 2009) per speaking time in minutes (SP frequency), mean length of silent pauses (MLSP), calculated as the total length of SPs divided by the total number of SPs. Speed fluency, reflecting articulatory and monitoring processes (Tavakoli & Wright, 2020), which, in turn, can be limited by language anxiety (Szyszka, 2017), was calculated with articulation rate (AR), measuring the number of syllables per speaking time, excluding pausing time, in minutes. Moreover, two composite measures of L2 utterance fluency were added: speech rate (SR), similar to AR but including pausing time, and mean length of run (MLR), operationalized here as the mean number of syllables per number of runs, informing about the amount of production between pausing. Generally, an array of pure and composite measures has been included in the study because they reveal different dimensions of fluency (Segalowitz, 2010). For instance, pure measures inform better about the underlying processes of speech formulation and production (Tavakoli et al., 2020) which might be affected by cognitive effects of language anxiety (Mora et al., 2023), whereas "composite measures correspond more strongly with human judgement of fluency" (Tavakoli et al., 2020, p. 170), the research of which has already identified connections between the perceived fluidity of speech and levels

of language anxiety (MacIntyre & Gardner, 1994). Finally, repair fluency was excluded from the analysis and approached more comprehensively in a separate study (Peltonen et al., in review).

The recording sessions consisted of the performance of a monologue task in English (L2) and in L1 Finnish, in which the participants were requested to tell one of two stories based on a cartoon strip of six frames without any verbal captions. Two cartoon stories were offered to counterbalance recordings in L1 and L2. Only L2 productions are focused on in this study. One of the stories, for instance, depicted a boy and a girl who planted a tree and observed its growth and change throughout the course of their lives. The frames were logically sequenced in order to limit additional cognitive load on part of the speakers. The participants had two minutes to prepare prior to performance. The overall number of words that the narrative generated for the extreme groups' participants was 1627 in the total performance time of 795 seconds (13.25 minutes). Six anxious individuals produced 691 words in 397 seconds, and the number of words in the group of six non-anxious participants was 936 in a similar time of 398 seconds. The average duration of speech samples of the whole group of 59 was 68.75 seconds, whereas in the low and high language anxiety groups the values were 66.33 and 66.16 seconds, respectively.

3.3 Participants

Twelve participants of the current study were selected from an initial group of 59 individuals, whose levels of LA were identified on the basis of the FLCAS (Horwitz et al., 1986). The analysis of the data resulted in identifying individuals whose LA levels were in the top or bottom tenth percentiles of the LA distribution in this group. Eventually, six participants, with the codes P53, P61, P63, P64, P68 and P70, who scored 105 and higher on the FLCAS were assigned to a high-anxiety group (HLA), whereas six other participants, P5, P37, P45, P50, P56, and P62, who scored 47 and lower represented a low-anxiety group (LLA).

The age in the HLA group ranged from 19 to 24, whereas in the LLA group between 18 and 38. On average, a similar amount of prior formal exposure to L2 was reported in both groups: for HLA 10.67 years and for LLA 10.50. In the HLA group, all individuals were females, and in the LLA group, there were five females and one male participant. The average proficiency level, measured with LexTale (Lemhöfer & Broersma, 2012), reached the mean value of 77.50 in the HLA group, with the minimum (Min) of 63.75 and maximum (Max) of 88.75, whereas the average score in the LLA group was 83.96, with the minimum reaching 68.75 and maximum 93.75 (see Table 1).

Table 1: Descriptive statistics of proficiency levels and biographical data
from the high language anxiety (HLA) and low language anxiety (LLA) groups.

Variables		Min	Max	Mean	SD
LexTALE	HLA (N=6)	63.75	88.75	77.50	8.73
	LLA (N=6)	68.75	93.75	83.95	9.09
Exposure to English (in years):	HLA (N=6)	9	15	10.67	2.25
	LLA (N=6)	10	12	10.50	.83
Age	HLA (N=6)	19	24	21.00	2.09
	LLA (N=6)	18	38	23.00	7.48

3.4 Procedure and analysis

A larger sample of L2 learners was recruited and requested to sign informed consents before completing the background questionnaire, performing a monologue task, responding to the FLCAS, measuring relatively stable LA levels, and the PSSA, examining Task-specific LA. The responses to the PSSA were additionally analyzed quantitively and qualitatively.

The analysis of the speech performance of six most anxious and six least anxious L2 learners focused on the markers of L2 speech fluency discussed earlier in Section 3.2. The speech samples were transcribed and coded by an informed research assistant and later checked by another research assistant. The transcription conventions applied after Peltonen and Lintunen (2016) were as follows: (.) – micro pauses .25 and shorter, : – elongations or drawls of sounds (e.g., a:nd), *pt* – lip smack, *hah* – laughter, (0.43) – timed pause, *h* – audible breaths, {*h*_0.83} – timed audible non-lexicalized filled pauses, including audible breaths.. Silent pauses longer than .25 were annotated in PRAAT (Boersma & Weenink, 2007) with the support of PRAAT script (De Jong et al., 2021), and temporal measures calculated with Lennes's (2002) script. The numbers of filled pauses and syllables were calculated manually.

4. Results

In this section, we first present basic descriptive statistics and non-parametric Wilcoxon test results for all variables in the HLA and LLA groups. Next, we address RQ1, analyzing individual participants' Task-specific LA levels reported immediately after performing the monologue task, and the qualitative self-reports on factors triggering anxiety. Finally, in response to RQ2 we compare in detail the L2 speech fluency indices of six HLA and six LLA individuals.

Basic statistics, including minimum, maximum and mean values as well as standard deviations obtained for relatively solidified LA levels and Task-specific LA, along with fluency measures in the speech samples of the anxious and non-anxious groups, are shown in Table 2. Additionally, the Wilcoxon test was performed to compare the values between the two groups.

The mean values of the FLCAS scores for the HLA and LLA groups reached 108.33 (SD = 3.07) and 44.5 (SD = 3.21), respectively, whereas on the PSSA scale, measuring Task-specific LA, the average scores were 4.83 among anxious (SD = 1.17) and 2.5 (SD = .84) among non-anxious individuals. Wilcoxon rank-sum test scores confirmed the differences in both relatively stable LA and Task-specific LA levels between these two extreme groups.

Table 2: Descriptive statistics and Wilcoxon rank-sum test results for LA, Task-specific LA, and fluency measures in the HLA and LLA groups.

Variables		Min	Max	Mean	SD	Wilcoxon	Z	p-value
LA	HLA (N=6)	105	113	108.33	3.07	21	-2.90	.004
	LLA (N=6)	40	47	44.50	3.21			
Task-specific LA	HLA (N=6)	4	7	4.83	1.17	22.5	-2.74	.006
	LLA (N=6)	2	4	2.50	.84			
FP frequency	HLA (N=6)	4.79	14.76	10.22	3.90	22	-2.72	.006
	LLA (N=6)	0	5.76	2.62	1.90			
SP frequency	HLA (N=6)	20.58	46.67	33.11	12.43	39	.00	1
	LLA (N=6)	28.65	38.93	32.67	3.66			
MLSP	HLA (N=6)	.55	1.85	1.00	.48	32	-1.12	.262
	LLA (N=6)	.51	1.00	.69	.18			
AR	HLA (N=6)	145.1	268.2	198.56	45.21	29	-1.60	.11
	LLA (N=6)	225.3	260.1	244.72	14.88			
SR	HLA (N=6)	108.2	147.7	129.29	14.20	22	-2.72	.006
	LLA (N=6)	137.4	206.3	178.63	24.74			
MLR	HLA (N=6)	4.21	9.33	6.47	1.87	32	-1.12	.26
	LLA (N=6)	5.83	8.88	7.58	1.09			

Descriptive statistics for fluency measures in the HLA and LLA groups indicated various degrees of variability between these groups. Generally, the mean values of FP frequency (Mean =10.22, SD = 3.90) and MLSP (Mean = 1.00, SD = .48) were higher in HLA than in LLA group (Mean = 2.62, SD = 1.90 for FP frequency and Mean = .69, SD = .18 for MLSP), whereas the average results regarding AR, SR and MLR were lower in HLA than in LLA group. The values of SP frequency of the HLA (Mean = 33.11, SD = 12.43) and LLA (Mean = 32.67, SD = 3.66) groups were very similar. However, Wilcoxon test results confirmed statistically significant differences between HLA and LLA only in the case of FP frequency and SR. Below a more nuanced analysis is provided to observe L2 speech fluency profiles of anxious and non-anxious individuals.

The first research question (RQ1) addressed the analysis of Task-specific LA of each individual participant who had been assigned to either the HLA (Table 3) or LLA (Table 4) group. The HLA participant P63 scored 7 out of 10, positioning them among the most anxious while performing a monologue task. The scores with the value 5 were obtained by P68 and P70, whereas P53, P61 and P64 scored 4 each. Interestingly, one individual from the LLA group (P5) also scored 4 on the PSSA. The researchers' decision was to include this participant in the LLA

group, based on the FLCAS score; however, a more cautious approach has been taken while discussing the results of this individual. Four LLA representatives: P37, P45, P56 and P62, scored 2 each, and one (P50) scored 3. Moreover, the comments provided in response to an open-ended question in the PSSA, generally validated the choice of extreme cases.

Table 3: Language anxiety (LA) measured with the FLCAS, Task-specific LA measured with the PSSA and L2 speech fluency measures for six high language anxiety (HLA) individuals.

Variables		P53	P61	P63	P64	P68	P70
LA		105	113	105	109	110	108
Task-specific LA		4	4	7	4	5	5
Fluency measures	FP frequency	6.86	10.92	4.79	10.02	14.76	13.99
	SP frequency	20.58	46.67	40.71	20.88	45.33	24.48
	MLSP	1.85	0.94	1.20	0.55	0.60	0.84
	AR	192.05	232.36	268.18	162.84	190.81	145.14
	SR	117.49	134.42	147.71	136.66	131.28	108.19
	MLR	9.33	4.98	6.59	7.80	4.21	5.93
	Total speaking time (in sec.)	28.60	104.45	45.49	85.61	82.73	46.03

Table 4: Language anxiety measured with the FLCAS (LA), Task-specific LA measured with the PSSA and L2 speech fluency measures for six low language anxiety (LLA) individuals.

Variables		P5	P37	P45	P50	P56	P62
LA		47	45	47	41	40	47
Task-specific LA		4	2	2	3	2	2
Fluency measures	FP frequency	1.85	5.76	2.10	0	3.37	2.63
	SP frequency	38.93	31.69	30.41	34.74	28.65	31.62
	MLSP	1.01	0.69	0.51	0.75	0.56	0.63
	AR	227.12	247.77	260.09	253.61	254.46	225.26
	SR	137.39	181.79	206.30	176.57	200.73	169.02
	MLR	5.83	7.82	8.55	7.30	8.88	7.12
	Total speaking time (in sec.)	106.99	56.77	72.13	49.61	45.14	60.70

While responding to the second part of RQ1, regarding reasons for transient Task-specific LA anxiety, the participants provided several insightful comments. The HLA group members referred to the possibility of making mistakes (P53), poor language skills (P70), difficulties with creating a story (P63), and limited L2 use combined with the fear of losing face – *I hadn't used English for a while so I was nervous if I'd mess up the words or say something really funny* (P68). The LLA individuals often reported openly their low anxiety levels, for instance, *I didn't feel any tension* (P45) and *I was not nervous because I was given clear instructions and I am used to speaking both languages every day* (P62). P56 attributed their lack of anxiety to their individual characteristics: *I'm a very competitive person by personality, and I want to succeed in whatever I do, whatever it is. If you talk about just speaking the language, I wasn't nervous about it at all. It was just the pressure to perform*. Generally, the data from the PSSA provided additional evidence, justifying the extreme groups sampling.

The results regarding L2 speech fluency measures of the HLA and LLA group members, addressing RQ2, are displayed in Table 3 and Table 4, respectively. First, breakdown fluency indices are analyzed before speed fluency and composite measures of speech rate and MLR.

The frequency of filled pauses per speaking time per minute (FP frequency) in HLA is relatively high, ranging from 4.79 (P63) to 14.76 (P68), as compared to LLA, where P50 did not apply any FPs and the maximal value was 5.76 (P37). Anxious individuals often produced non-lexicalized filled pauses between silent pauses, as in examples (1), (2) and (3):

(1) *that the tree has started to grow {*h*_2.74} umm (1.15) in the second picture* (P61)
(2) *play and (0.34) u:h (0.38) sing with him* (P64)
(3) *a top hat? {*pt*_1.03} u:h (0.35) the child* (P68)

Among non-anxious speakers, the above instances of the FPs' use were negligible. In this group, some instances of FPs were preceded by SPs and immediately followed by lexicalized items, as in (4), (5) and (6):

(4) *the woman and the man (0.48) er think about *pt* (0.77) mm maybe using* (P37)
(5) *doesn't land on the snowmon but it la:nds (0.83) erm on the ground* (P56)
(6) *for example (0.32) u:h they:* (P62)

The spread of SP frequency among anxious participants was more than twice as high (the value of 26.09) than that of non-anxious (the value of 10.29) individuals. In other words, SP frequency of LLA group clustered around the mean value of 32.67, with highest SP frequency of 38.93 in P5, and lowest SP frequency of 28.65 in P56, which means that the number of SPs in the speech of the LLA group members was fairly comparable. In contrast, this L2 fluency measure was more varied in the HLA group, where the SP frequency of three

participants was relatively low: for P53, P64 and P70 SP frequency equaled 20.58, 20.88 and 24.48, respectively. However, the numbers of SPs of the other three anxious speakers were rather high: for P63, P68 and P61 reaching 40.71, 45.33, 46.67, respectively. Examples (7), (8) and (9) illustrate the pausing patterns of the three HLA top scorers on SPs frequency:

(7) *(0.96) they used to put (0.46) a swing up there and (0.53) play with it (0.29) and uh (3.01)* (P61)

(8) *(0.35) the child (0.46) tells the man that (0.37) if: he (0.34) puts (0.31)* (P68)

(9) *(0.58) an (0.39) when the wo:man dies (0.65) man still visits (0.29) the tree stump (3.73)* (P63)

The mean lengths of SP in both HLA and LLA groups were somewhat similarly variable. The two highest values, however, were reported among HLA P53 (MLSP = 1.85) and P63 (MLSP = 1.20), whereas the lowest mean length of SP (0.51) was found for LLA P45.

The speed fluency measures selected for the analysis varied considerably in the HLA and LLA groups. AR of four anxious participants was below 200 syllables per speaking time per minute (AR^{P53} = 192.05, AR^{P64} = 162.84, AR^{P68} = 190.81, AR^{P70} = 145.14), whereas all non-anxious L2 learners spoke, with pausing time excluded, at least at the rate of 225 syllables per speaking time per minute. The top scorer for AR (P63), however, belonged to HLA. While analyzing the relatively fast speech of P63 (AR^{P63} = 268.18), some attention was given to a relatively large mean value of SP length, suggesting that this fairly fast anxious speaker inserted fairly long pauses, as in (9). The speech of another anxious individual (P61) with a relatively high level of AR, in turn, exhibited a high level of SP frequency and was filled with drawls, particularly of an item 'and', repeated frequently in the speech sample, as in examples (7) and (10):

(10) *(0.83) a:nd (1.39) they decided to use (0.70) the old tree (81.33) to build the house a:nd (1.01) they cut it down (1.88) and they* (P61)

The differences between the HLA and LLA groups were also identified in the values of SR. In the HLA group, SR ranged between 108.19 (P70) and 147.71 (P63), whereas in LLA group five individuals scored higher than 169.00, with one exception of P5, whose SR reached the value of 137.39. This participant scored four on the PSSA, indicating some level of transient task-specific anxiety. Moreover, for P5, both frequency and mean length of SP were highest in the LLA group. Generally, the speed of speech of anxious participants was relatively slower in comparison to the performance of their non-anxious peers.

When comparing MLR of anxious participants, the patterns varied from 4.21 (P68) to 9.33 (P53), with the mean value of 6.47. MLR of the non-anxious participants ranged between 5.83 (P5) and 8.88 (P56), with the average of 7.58 The profile of the HLA group, therefore, was more varied in terms of MLR than

that of the LLA group. In a very short total speaking time of 28.60 seconds, anxious P53 produced on average as many as 9.33 syllables per run. As Example (11) shows, P53 preceded the long run with a pause lasting for 2 seconds, providing ample time for planning and articulation. Additionally, in this run, two drawls, a micro pause and a repetition served as mechanisms for sustaining fluency. Although the amount of speech production in a run was lower in the case of P61 (MLR = 4.98) and P68 (MLR = 4.21), similar mechanisms of long pausing and use of drawls were applied before the longer stretches of speech, as in examples (12) and (13).

(11) *{*h*_2.00}* bu:t he slips a:nd (.) when the l- when the hat lands on the snowman (0.84) (P53)

(12) (1.23) when they got o:ld they started to: (1.02) regret the decision to cut down the tree (0.75) (P61)

(13) *{*h*_1.40}* so(h) u:h they ask him to: (0.32) put the hat o:n and so: that the:: snowman could come alive and {*h*_0.45} (P68)

In contrast, with an exception of P5, whose MLR reached 5.83, five non-anxious individuals exhibited a fairly unified profile regarding MLR, with the values clustering around approximately 8 syllables per run on average.

5. Discussion

The aim of the study was to investigate the levels of transient anxiety states reported immediately after performing a monologue task, along with the reasons for their Task-specific LA levels (RQ1), and scrutinize L2 utterance fluency markers (RQ2) of anxious and non-anxious L2 learners.

As regards RQ1, some attention should be given to the role of more transient Task-specific LA, whose levels were mostly, with one exception, in line with relatively stable LA levels in both groups. However, the case of generally non-anxious P5, whose transient state of LA emerged to be closer to the levels of anxious individuals, underlies the importance of approaching LA research from both perspectives (cf. Gkonou et al., 2017). Although this individual's level of more solidified LA was low, they declared to experience some degree of anxiety while performing the task. Interestingly, some values of L2 speech fluency markers of this participant, such as SP frequency, SR, and MLR, overlapped with the results in the HLA group, providing support for the dynamic interplay between affect and L2 speech fluency and justifying research which involves both trait-like and dynamic approaches to LA. This case also underscores the role of case studies with their emergent findings, which zoom into the linguistic and contextual processes of an individual language user.

The reasons for anxiety levels stated by the participants of the study (RQ1) confirmed their affiliation to the extreme groups. While the HLA individuals attributed their LA levels to linguistic (e.g., low language skills), cognitive

(e.g., difficulties with creating a story) and psychological (e.g., fear of losing face) aspects, their non-anxious peers mostly emphasized their lack of tension or nervousness.

Addressing RQ2, an in-depth speech analysis of twelve individuals, six representing each extreme group, produced several insightful results concerning breakdown and speed fluency, as well as speech rate and the amount of speech produced between pausing operationalized as MLR. First, the study revealed that the HLA group used FPs more often than the LLA one, which is in line with Szyszka et al. (in review), who reported significant differences in FPs frequency between groups exhibiting high and low levels of language anxiety at input, processing and output stages of linguistic processing. Moreover, the novel finding of this study concerns different patterns in the use of FPs, which were observed in the speech samples of anxious and non-anxious participants. While several instances of non-lexicalized filled pauses were identified between silent pauses in the speech of anxious L2 learners, such occurrences were rare among non-anxious individuals, whose FPs were frequently immediately followed by lexicalized items. Such mechanisms of inserting FPs in-between SPs probably served the purpose of filling time with a sound to avoid prolonged silence while coping with planning, conceptualization or articulation problems (Cossavella & Cevasco, 2021), which might have been partially grounded in the affective arousal. This finding implies that advanced L2 learners who are anxious resort to coping strategies that reduce silent pausing and mask disfluency effect (see also Peltonen, 2020). However, further studies, for instance those including stimulated recall, are needed to substantiate this claim.

Second, within the HLA group, individuals differed markedly in the frequency of SPs, whereas the numbers of SPs applied by the LLA group were fairly similar. The durations of SPs in both HLA and LLA groups, however, were to a degree alike, probably reflecting individual speaking styles of speakers. Nevertheless, more comprehensive conclusions on pausing behaviour cannot be reached without further investigations, inspecting other breakdown fluency indices, for instance, the location of pauses in the speech samples of anxious and non-anxious L2 learners.

Some differences between the groups were observed in the speech rate. The analysis showed that anxious participants differed in terms of speed and pausing time from their non-anxious peers. This has been observed in earlier quantitative studies where higher AR and SR were connected with lower levels of language anxiety (e.g., Simard et al., 2023; Szyszka et al., in review; Pérez Castillejo, 2019). Slowing down L2 speech might be interpreted as either a subconscious coping mechanism that provides additional time for planning, conceptualization and articulation of speech or it might result from inefficiency of underlying cognitive processing, limited by language anxiety, even at a high proficiency level.

Next, the amount of speech, measured with MLR, was more varied in the HLA group than in the LLA group. The stretches of speech of three HLA individuals were similar to the amount of speech produced by LLA individuals, whereas the average values of the runs in the samples of other three HLA participants were comparatively short. This finding only partially corroborates the previous study results, which reported longer runs between silent pauses among less anxious participants (Bielak, 2022; Pérez Castillejo, 2019). An interesting finding is that non-anxious individuals produced relatively similar average numbers of syllables per run. In other words, their MLR profile was more consistent than in the case of the HLA group.

The micro-perspective of the extreme cases analysis rendered the findings that provide new evidence to the state of knowledge into the role of affective domain in L2 fluency, which has recently gained more attention (e.g., Peltonen et al., in review; Simard et al., 2023; Szyszka et al., in review; Zuniga & Simard, 2022). The evidence from this study substantiates the claim that a large degree of variability is associated with language production. The reasons behind this variability might be multifold, and affective arousal of an L2 speaker is just one of them. Interestingly enough, this extreme case sampling report reveals that language anxiety is tied to certain but not all fluency features, and L2 speech fluency profiles of anxious and non-anxious individuals are complex enough to preclude unequivocal generalizations.

This zoomed-in approach of the study brings some limitations, which need to be addressed. One of the limitations is that L2 speech fluency analysis has employed selected utterance fluency measurements, excluding such utterance fluency indices as repair fluency and pausing location. More recently, for instance, the role of mid-clause pausing has been observed in relationship with speaking anxiety (Pérez Castillejo, 2019; Mora et al., 2023) and processing difficulties in speech planning and lexical retrieval (Kahng, 2020). Difficulties in word retrieval, in turn, have been reported to be associated with the cognitive effects of speaking anxiety (Donate, 2022). These limitations of the current study and recent research findings open space for further investigations with L2 utterance fluency indices focusing, for instance, on pausing location and repairs of various types to provide an extended picture of the interplay between L2 speech fluency and the affective factors. The extreme case report may also be supplemented with perceived fluency measures, which might then be compared with L2 utterance fluency measures of anxious and non-anxious speakers. A further limitation involves the speech samples, which were elicited from a monologue task. Although this form is more controlled, it precludes natural use of turn taking between interlocutors and more spontaneous flow of speech, which might be associated with fluctuations of LA. Therefore, the analysis of L2 speech based on dialogues and a dynamic record of LA might reveal further insights into the interplay of L2 speech fluency and LA.

6. Conclusion

The present study has examined perceived sources and levels of temporary Task-specific LA, and L2 speech fluency indices of generally anxious and non-anxious advanced L2 learners. The participants revealed linguistic, cognitive and psychological sources of their LA. The levels of the relatively stable LA and more transient Task-specific LA overlapped in the case of most participants, but the exceptions identified in the study substantiated the need to approach research focusing on LA from both micro- and macro-perspectives. The individual profiles of the participants illustrated differences in the use and number of filled pauses, speed of speech and amount of speech in HLA and LLA groups. However, the length and frequency of silent pauses did not distinguish these groups. The extreme case approach followed in the study provided space for an in-depth analysis of the data frequently overlooked in large scale studies. The case of P5 showed how individuals are challenging to categorize based on one measure only, which triggers further methodological considerations over the research design that involves capturing L2 learners' affective dimensions at both relatively stable trait-like and more transient dynamic levels.

Moreover, the findings contribute to the area of fluency assessment and teaching. For instance, oral performance examiners and teachers might benefit from the knowledge that LA is manifested in slower speech rate and more frequent use of FPs. Therefore, perceiving these phenomena as coping strategies of anxious L2 learners rather than disfluency mechanisms may contribute to the level of assessment objectivity and encourage didactic approaches to introducing fluency building strategies, particularly among anxious L2 learners. The outcomes of this study, therefore, serve teachers in raising their awareness on the reasons behind the fluency profiles of L2 learners.

References

Aubrey, S. (2022). The relationship between anxiety, enjoyment, and breakdown fluency during second language speaking tasks: An idiodynamic investigation. *Frontiers in Psychology* 13. 968946. doi: 10.3389/fpsyg.2022.968946

Boersma, P., & Weenink, D. (2007). Praat (Version 6.2.09) [Software]. Available for download from www. praat.org

Bielak, J. (2022). To what extent are foreign language anxiety and foreign language enjoyment related to L2 fluency? An investigation of task-specific emotions and breakdown and speed fluency in an oral task. *Language Teaching Research*, 0(0). 136216882210793.
doi: 10.1177/13621688221079319.

Botes, E., Dewaele, J. M., & Greiff, S. (2020). The foreign language classroom anxiety scale and academic achievement: An overview of the prevailing literature and a meta-analysis. *Journal for the Psychology of Language Learning*, 2(1), 26–56. Retrieved from http://jpll.org/index.php/journal /article /view /botesetal
https://doi.org/10.52598/jpll/2/1/3

Cossavella, F., & Cevasco, J. (2021). The importance of studying the role of filled pauses in the construction of a coherent representation of spontaneous spoken discourse. *Journal of Cognitive Psychology, 33*(2), 172–186. doi: 10.1080/20445911.2021.1893325

De Bot, K. (1992). A bilingual production model: Levelt's 'speaking' model adapted. *Applied Linguistics*, 13(1), 1–24.

De Jong, N. H. (2016). Fluency in second language assessment. In D. Tsagari & J. Banerjee (Eds.), *Handbook of second language assessment* (pp. 203–218). Berlin: De Gruyter.

De Jong N. H., Pacilly J. J. A. & Heeren W. F. L. (2021). PRAAT scripts to measure speed fluency and breakdown fluency in speech automatically. *Assessment in Education: Principles, Policy & Practice, 28*(4), 456–476. doi.org/10.1080/0969594X.2021.1951162

De Jong, N. H., & Wempe, T. (2009). Praat script to detect syllable nuclei and measure speech rate automatically. *Behaviour Research Methods,* 41, 385–390. doi: doi.org/10.3758/BRM.41.2.385

Derakshan, N., & Eysenck, M. W. (2009). Anxiety, processing efficiency, and cognitive performance. *European Psychologist, 14*(2), 168–176. doi: doi.org/10.1027/1016-9040.14.2.168

Derwing, T. M., Munro, M. J., Thomson, R. I. & Rossiter, M. J. (2009). The relationship between L1 fluency and L2 fluency development. *Studies in Second Language Acquisition, 31*, 533–557 https://doi.org/10.52598/jpll/2/1/3.

Donate, Á. (2022). Task anxiety, cognition and performance on oral tasks in L2 Spanish. *Journal of Spanish Language Teaching, 9*(1), 1-18. doi: 10.1080/23247797.2022.2090661

Dörnyei, Z. (2010). *Research methods in applied linguistics: Quantitative, qualitative, and mixed methodologies*. Oxford: Oxford University Press.

Ejzenberg, R. (2000). The juggling act of oral fluency: A psycho-sociolinguistic metaphor. In H. Riggenbach (Ed.), *Perspectives on fluency* (pp. 287–313). Ann Arbor, Michigan: The University of Michigan Press.

Eysenck, M. W., Derakshan, N., Santos, R., & Calvo, M. G. (2007). Anxiety and cognitive performance: Attentional control theory. *Emotion, 7*, 336–353. doi: 10.1037/1528-3542.7.2.336

Gkonou, C. Daubney, M., & Dewaele, J-M. (Eds.)(2017). *New insights into language anxiety: Theory, research and educational implications*. Bristol: Multilingual Matters. https://doi.org/10.52598/jpll/2/1/3

Horwitz, E. K., Horwitz, M. B., & Cope, J. A. (1986). Foreign Language Classroom Anxiety. *The Modern Language Journal*, 70(2), 125–132. doi: doi.org/10.2307/327317

Kormos, J., & Dénes, M. (2004). Exploring measures and perceptions of fluency in the speech of second language learners. *System,* 32(2), 145-164. https://doi.org/10.1016/j.system.2004.01.001

Kahng, J. (2020). Explaining second language utterance fluency: Contribution of cognitive fluency and first language utterance fluency. *Applied Psycholinguistics, 41*(2), 457–480. doi:10.1017/S0142716420000065

Kormos, J., & Préfontaine, Y. (2017). Affective factors influencing fluent performance: French learners' appraisals of second language speech tasks. *Language Teaching Research, 21*, 699–716. https://doi.org/10.1177/1362168816683562

Lemhöfer, K., & Broersma, M. (2012). Introducing LexTALE: A quick and valid lexical test for advanced learners of English. *Behavior research methods, 44*(2), 325–343. https://doi.org/10.3758%2Fs13428-011-0146-0

Lennes, M. (2002). Total duration of labeled segments. Praat script. Available: https://github.com/lennes/spect/blob/master/scripts/total_duration_of_labeled_segments.praat

Lennon, P. (2000). The lexical element in spoken second language fluency. In H. Riggenbach (Ed.), *Perspectives on fluency* (pp. 25–42). Ann Arbor, Michigan: The University of Michigan Press.

Levelt, W. J. M. (1989). Speaking: From intention to articulation. Cambridge, Mass. MIT Press. https://doi.org/10.7551/mitpress/6393.001.0001

Lintunen, P., Mutta, M., & Peltonen. P. (2020). Synthesising approaches to second language fluency: Implications and future directions. In P. Lintunen, M. Mutta, & P. Peltonen (Eds.), *Fluency in L2 learning and use* (pp. 219-236). Bristol: Multilingual Matters. https://doi.org/10.21832/9781788926317

MacIntyre, P. D. (2017). An overview of language anxiety research and trends in its development. In C. Gkonou, M. Daubney, & J-M. Dewaele (Eds.), *New insights into language anxiety: Theory, research and educational implications* (pp. 11–39), Bristol: Multilingual Matters. https://doi.org/10.21832/9781783097722-003

MacIntyre, P. D., & Gardner, R. C. (1994). The subtle effects of language anxiety on cognitive processing in the second language. *Language Learning, 44*, 283-305. https://doi.org/10.1111/j.1467-1770.1994.tb01103.x

MacIntyre, P. & Wang, (2020). Anxiety. In Shaofeng Li, Phil Hiver, & Mostafa Papi (Eds.), *The Routledge handbook of second language acquisition and individual differences* (pp. 175-189). New York: Routledge.

Mora, J. C., Mora-Plaza, I., & Bermejo Miranda, G. (2023). Speaking anxiety and task complexity effects on second language speech. *International Journal of Applied Linguistics, 00,* 1–24. https://doi.org/10.1111/ijal.12494

Peltonen, P. (2020). Individual and interactional speech fluency in L2 English from a problem-solving perspective: A mixed-methods approach. PhD dissertation. *Annales Universitatis Turkuensis, Tom*. 517, Turku: University of Turku. https://www.utupub.fi/handle/10024/150313

Peltonen, P., & Lintunen, P. (2016). Integrating quantitative and qualitative approaches in L2 fluency analysis: A study of Finnish-speaking and Swedish-speaking learners of English at two school levels. *European Journal of Applied Linguistics, 4*, 209-238. doi.org/10.1515/eujal-2014-0018

Peltonen, P., Olkonen, S., Szyszka, M., & Lintunen, P. (in review). L2 repair fluency through the lenses of L1 repair fluency, cognitive fluency, and language anxiety.

Pérez Castillejo, S. (2019). The role of foreign language anxiety on L2 utterance fluency during a final exam. *Language Testing, 36*(3), 327–345. https://doi.org/10.1177/0265532218777783

Phillips, E. M. (1992). The effects of language anxiety on students' oral test performance and attitudes. *The Modern Language Journal, 76*(1), 14–26. https://doi.org/10.1111/j.1540-4781.1992.tb02573.x

Satar, H. M., & Ozdener, N. (2008). The effects of synchronous CMC on speaking proficiency and anxiety: Text versus voice chat. *The Modern Language Journal, 92*(4), 595–613. https://doi.org/10.1111/j.1540-4781.2008.00789.

Segalowitz, N. (2010). *Cognitive bases of second language fluency*. New York: Routledge. https://doi.org/10.4324/9780203851357

Simard, D., Zuniga, M., & Hameau, F. (2023). How do attention-shift and foreign language anxiety interact with objective and subjective measures of fluency? *Language Teaching research, 0*(0). https://doi.org/10.1177/13621688221146379

Skehan, P. (2009). Modelling second language performance: Integrating complexity, accuracy, fluency, and lexis. *Applied Linguistics, 30*(4), 510-532. https://doi.org/10.1093/applin/amp047

Szyszka, M. (2017). *Pronunciation learning strategies and language anxiety: In search of an interplay.* Cham: Springer. https://doi.org/10.1007/978-3-319-50642-5

Szyszka, M, Peltonen, P., & Lintunen, P. (in review). Unravelling the relationship between language anxiety and L2 speech fluency in a monologue production.

Tavakoli, P., Nakatsuhara, F., & Hunter, A. (2020). Aspects of fluency across assessed levels of speaking proficiency. *The Modern Language Journal*, 104, 169-191. https://doi.org/10.1111/modl.12620

Tavakoli, P., & Hunter, A-M. (2018). Is fluency being 'neglected' in the classroom? Teacher understanding of fluency and related classroom practices. *Language Teaching Research, 22*(3), 330–349. https://doi.org/10.1177/1362168817708462

Tavakoli, P., & Skehan, P. (2005). Strategic planning, task structure, and performance testing. In R. Ellis (Ed.), *Planning and task performance in a second language* (pp. 239–273). Amsterdam: John Benjamins. https://doi.org/10.1075/lllt.11.15tav

Tavakoli, P., & Wright, C. (2020). *Second language speech fluency: From research to practice* (Cambridge Applied Linguistics). Cambridge: Cambridge University Press. doi:10.1017/9781108589109

Teimouri, Y., Goetze, J., & Plonsky, L. (2018). Second language anxiety and achievement: A meta-analysis. *Studies in Second Language Acquisition, 41*(2), 363–387. doi:10.1017/S0272263118000311

Tóth, Z. (2017). Exploring the relationship between anxiety and advanced Hungarian EFL learners' communication experiences in the target language: A study of high- vs low-anxious learners. In C. Gkonou, M. Daubney & J. Dewaele (Ed.), *New insights into language anxiety: Theory, research and educational implications* (pp. 156-174). Bristol, Blue Ridge Summit: Multilingual Matters. https://doi.org/10.21832/9781783097722-010

Tóth, Z. (2012). Foreign language anxiety and oral performance: Differences between high-vs. low-anxious EFL students. *US-China Foreign. Language, 10*(5), 1166–1178.

Zhang, X. (2019). Foreign language anxiety and foreign language performance: A meta-analysis. *The Modern Language Journal, 103*(4), 763–781. doi:10.1111/modl.12590

Zuniga, M. & Simard, D. (2022). Exploring the intricate relationship between foreign language anxiety, attention and self-repairs during L2 speech production. *System,* 105, 102732. https://doi.org/10.1016/j.system.2022.102732