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L1–L2 PAUSING: DISTRIBUTION AND DURATION OF SILENT PAUSES IN URDU AND ENGLISH

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Abstract:

Most evidence on L1–L2 pausing comes from monologic tasks (picture/video narratives; computer prompts); here we examine dialogic conversation, where turn-taking and planning pressures differ. We compare the frequency, duration, and placement of silent pauses in Urdu (L1) and English (L2), analyzing 108 minutes of conversation from 18 speakers. L2 English shows more frequent and longer within-ASU pauses, whereas L1 Urdu shows more boundary-aligned pausing. These patterns support a placement-sensitive disfluency model in which within-ASU pauses index linguistic encoding demands and between-ASU pauses index conceptual planning.

1. Introduction:

Speakers can suspend speech by stopping briefly, producing a silent interval. Such silences arise for several, often overlapping reasons: they provide time for planning (psychological function; Goldman-Eisler, 1968; Maclay & Osgood, 1959), support breathing (physiological function; Zellner, 1994), and mark syntactic or prosodic structure (textual structuring function; Ferreira, 2007; Goldman-Eisler, 1968; Lundholm Fors, 2015). In addition to these functions, silence also plays a communicative role (Dovetto, 2010): it can highlight important information (Duez, 1997; Strangert, 2003), signal discourse boundaries (Esposito et al., 2007), manage turn-taking (Beňuš, 2009; Sacks et al., 1974), or reveal hesitation and processing difficulty. Importantly, longer silences are often associated with greater processing demands (Chowdhury et al., 2017). Because a single pause can serve multiple roles, defining what counts as a silent (unfilled) pause is not straightforward (Eklund, 2004; Lickley, 2015), and some studies have excluded silent pauses altogether when analyzing disfluency (Bortfeld et al., 2001).

Building on this functional perspective, researchers have long debated how best to measure and classify silent pauses. In particular, the duration threshold used to identify pauses has been controversial. Early studies suggested that gaps shorter than 250 ms were largely articulatory (Goldman-Eisler, 1958), and many subsequent studies adopted a 200 ms minimum (Beattie & Butterworth, 1979; O'Shaughnessy, 1992). However, Hieke et al. (1983) challenged this view, showing that many pauses between 130–250 ms are linked to psychological or textual factors rather than purely mechanical processes. Later work set even lower thresholds, down to 60 ms (Kendall, 2009). Thus, while duration is an important parameter, its interpretation depends heavily on contextual placement: within an utterance, even short gaps may function as hesitation, whereas between utterances, much longer silences are acceptable (Lickley, 2015; Lundholm Fors, 2015).

This has led to a growing focus on pause placement as a key dimension. Researchers have classified silent pauses according to whether they occur within or between syntactic units, since these locations reflect different planning processes (de Jong, 2015, 2016; Kahng, 2014; Yan et al., 2021). Pauses within syntactic units are generally linked to linguistic encoding, whereas pauses between units are associated with conceptualization (Skehan et al., 2016; Yan et al., 2021). To operationalize such distinctions, scholars use units like the clause or the Analysis of Speech Unit (ASU) (Foster et al., 2000; Suzuki & Kormos, 2023; Gao & Sun, 2023). The ASU, defined as "an independent clause, or sub-clausal unit, together with any subordinate clause(s)

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associated with either" (Foster et al., 2000, p. 365), provides a flexible yet systematic way to distinguish between- and within-unit pauses.

While the extent literature explores the role of placement and duration of silent pauses, the studies on the difference between SPs in context of different languages particular south Asians languages are scarce. Drawing on these insights, the present study investigates Urdu (L1) and English (L2) with explicit attention to pause duration and placement at the ASU level. By distinguishing between-ASU pauses (occurring at ASU boundaries) and within-ASU pauses (inside ASUs), we aim to interpret pause duration in relation to discourse function: between-ASU pauses are expected to align with grammatical and discourse boundaries, while within-ASU pauses are more likely to reflect hesitation during linguistic encoding. To the best of our knowledge, this is the first study to systematically compare Urdu (L1) and English (L2) pause behavior within the same group of speakers, focusing on both duration and contextual placement at the ASU level.

2. **Silent Pauses in L1 and L2:**

Silent pauses are widely documented as one of the most frequent features of spontaneous speech (Boomer, 1965; Goldman-Eisler, 1958). Many studies have asked not only how much speakers pause, but where they pause—and how this differs between first-language (L1) and second-language (L2) speech. A recurring finding is that fluent speech tends to align pauses with grammatical junctures, while less fluent L2 speech shows more pausing within clauses or utterances (e.g., Davies, 2003; de Jong, 2016; Kahng, 2014; Tavakoli, 2011). Bosker (2014) emphasizes that L1–L2 differences concern not only quantity but also the distribution of disfluencies. In particular, Kahng (2014) identifies one of the starkest contrasts in the number of pauses occurring within a clause. This dovetails with the view that fluent production is encoded roughly a clause at a time (Pawley & Syder, 2000), making mid-clause pausing a plausible marker of planning or encoding difficulty (Wood, 2010). Accordingly, recent studies highlight within-clause or within-utterance pausing as a characteristic of L2 speech (de Jong, 2016; Kahng, 2014). When directly compared with native speakers, L2 learners tend to pause more often—and for longer—within clause/message boundaries, while showing broadly similar behavior at clause/message edges (De Jong, 2016; Kahng, 2014; Skehan & Foster, 2012; Tavakoli, 2011). De Jong (2016) reports comparable patterns across proficiency groups.

A closely related perspective distinguishes pausing within vs. between defined structural units, variously operationalized as clauses or Analysis of Speech Units (ASUs; Foster et al., 2000). Several studies conclude that L2 speakers pause more within ASUs (Skehan & Foster, 2007), within clauses (Tavakoli, 2011), or within constituents (Riazantseva, 2001) than L1 speakers. At the same time, comparisons can be sensitive to how pausing is measured and summarized. For example, Riazantseva (2001) compared the percentage of within-constituent pauses in the same speakers' L1 (Russian) and L2 (English) and across proficiency levels; if L1 or higher-proficiency speech contained longer or more complex constituents, the opportunity to pause would differ across conditions, affecting percentages and potentially masking proficiency effects. Skehan and Foster (2007) reported ratios of within- to between-ASU pauses and mean counts per performance; such metrics become hard to compare when ASU lengths differ or one group produces more ASUs overall. Tavakoli (2011) contrasted mean numbers of within- vs. between-clause pauses for L1 and L2 groups, again raising the concern that longer clauses inherently offer more mid-clause pause sites. To reduce such comparability issues, some work treats each word boundary as a possible pause position and models the probability of pausing directly, so that ASU length and the number of ASUs do not confound estimates of where pauses occur.

Task design also bears on pausing behavior. Much of the evidence distinguishing L1 and L2 pause distribution comes from monologic picture/video narratives (Skehan et al., 2016;

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Tavakoli, 2011) and responses to computer-delivered prompts (De Jong, 2016; Kahng, 2014). To attain a fuller view of pausing in production, it is valuable to examine dialogic interaction as well, an emphasis of the present study.

Findings from previous work indicate that pause location (rather than overall frequency or duration) robustly separates L1 from L2 speech (De Jong, 2016; Foster & Tavakoli, 2009; Kahng, 2014; Skehan et al., 2016; Tavakoli, 2011). Evidence from specific studies illustrates that L1 pauses tend to cluster at or near clause boundaries. By contrast, L2 speakers are expected to pause more within clauses because of a smaller lexicon and/or less efficient lexical access (Kormos, 2006; Skehan et al., 2016). In a one-minute, computer-prompted speaking task, Kahng (2014) found that the rate of silent pauses within a clause for L2 speakers was approximately double that of L1 speakers. Moreover, both Kahng and De Jong argue that because location reliably differentiates L1 and L2 speech, assessment tools should incorporate utterance-fluency indices that are sensitive to where pauses occur, alongside how long they last. In sum, prior studies converge on two points relevant to the present work. (i) Silent pauses are common and sensitive to many speaker, task, and language factors (Boomer, 1965; Goldman-Eisler, 1958; Tannenbaum et al., 1967; Duez, 1982; Trouvain & Möbius, 2014). (ii) The location of pauses, within vs. between structural units, consistently distinguishes L1 from L2 speech and tracks L2 proficiency (Davies, 2003; de Jong, 2016; Kahng, 2014; Skehan & Foster, 2012; Tavakoli, 2011; Foster et al., 2000; Skehan & Foster, 2007; Riazantseva, 2001).

Building upon the literature, the present study examines Urdu (L1) and English (L2) in dialogic conversation, comparing between vs. within ASU pauses, and evaluates whether L2 speech shows the same boundary-aligned profile as L1 or a stronger tendency toward within-unit pausing, patterns that earlier work links to formulation difficulty and lexical/grammatical encoding demands (Cenoz, 1998; Lennon, 1984; Wood, 2010; Kormos, 2006; Skehan et al., 2016). By doing so, the study contributes new evidence from an underexplored language and clarifies whether bilingual speakers adopt L2 pausing patterns or carry over their L1 strategies into L2 production.

3. Corpus & Methods:

The silent pauses (SPs) of eighteen female speakers of Urdu (L1) and English (L2) were analyzed to examine variation in pause use. Participants were undergraduate students at Government College University Faisalabad, aged 20–25 years (M = 20), with no reported language or hearing disorders. All were native speakers of Urdu and proficient users of English (L2).

Recordings were made in a quiet indoor room with a microphone positioned ~30 cm from the speaker. Speech was captured at 48 kHz and later annotated in PRAAT (Boersma & Weenink, 2015). Each of nine spontaneous conversations lasted 12 minutes, yielding 108 minutes of speech in total. Topics included daily routines, hobbies, and future plans. To minimize observer effects, speakers were not informed that silent pauses were the focus of analysis. Across recordings, SPs were identified and analyzed for each speaker with respect to (a) frequency, (b) duration and (c) placement, i.e., between-ASU vs. within-ASU positions (ASU = Analysis of Speech Unit; Foster et al., 2000). All SPs ≥ 150 ms were annotated in PRAAT. The results were then compared across speakers and languages.

4. Results:

4.1.Frequency of silent pauses

The distribution of SPs varied considerably across speakers and languages (see Fig. 1). Of the 18 speakers, 12 (67%) produced more SPs in English than in Urdu, whereas 6 (33%) produced more in Urdu than in English. Clear English predominance is evident for several individuals, for example, S2 (226 vs. 103), S7 (161 vs. 74), and S14 (199 vs. 122). In contrast, the strongest tendency toward Urdu appears for S8 (179 vs. 107), with smaller Urdu leads for S1 (78 vs. 54),

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S17 (62 vs. 41), S18 (106 vs. 91), S15 (166 vs. 150), and S6 (53 vs. 50). Overall variability is high, with per-speaker counts ranging from 41–226 in English and 35–179 in Urdu. In short, most speakers produce more SPs in English (L2) than in Urdu (L1), though individual patterns vary substantially, motivating the position-specific analyses (within- vs. between-ASU) reported later.

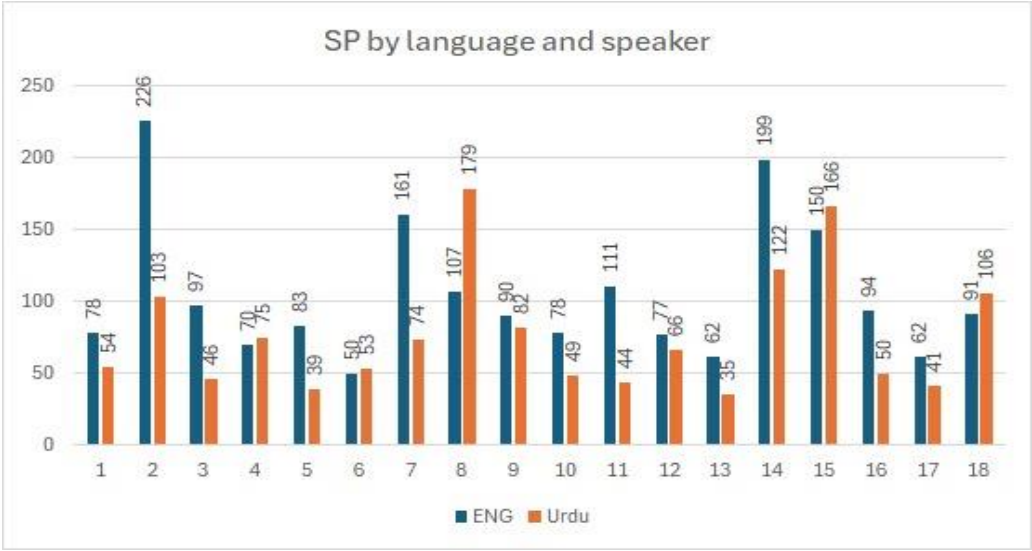

Figure 1. Frequency of silent pauses (SP) by speaker in English (L2) and Urdu (L1).

Figure 2 illustrates the distribution of between-ASU silent pauses across 18 speakers, showing noticeable variation and a slight overall tendency toward Urdu. Of these speakers, 11 produced more pauses in Urdu, 6 produced more in English, and 1 produced nearly the same number in both languages. The most striking Urdu predominance is seen in S15, with 81 pauses in Urdu compared to 52 in English, and in S8, who produced 51 in Urdu versus 27 in English. In contrast, S7 stands out with the strongest English preference, producing 57 pauses in English and only 19 in Urdu. Overall, counts span 10–57 in English and 14–81 in Urdu, with most speakers clustering in the 15–35 range for both languages. These patterns suggest that while Urdu tends to encourage more between-ASU pausing, individual strategies differ widely, highlighting both speaker-specific and language-related effects on pause production.

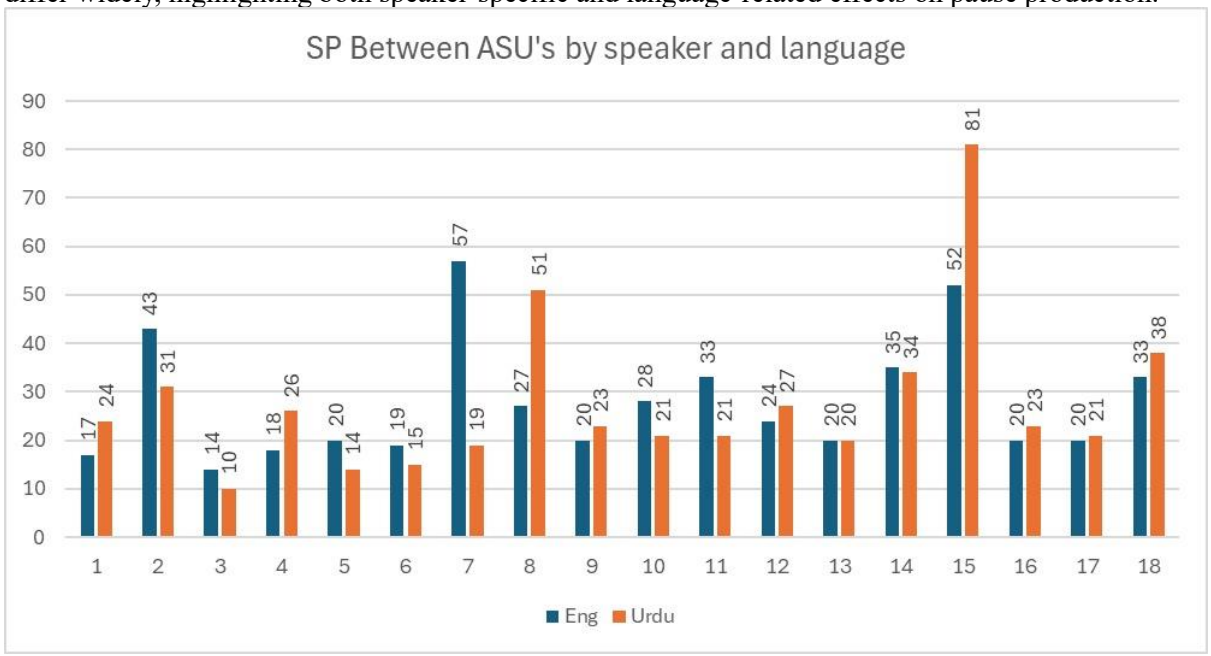

Figure 2. Frequency of between-ASU silent pauses (SP) by speaker in English (L2) and Urdu (L1).

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The distribution of within-ASU silent pauses varies substantially across the 18 speakers, with a pronounced overall tendency toward English (see figure 3). Fourteen speakers produced more within-ASU pauses in English, while four showed higher counts in Urdu. The strongest English predominance is evident for S2 (183 vs. 72), S14 (164 vs. 88), and S7 (104 vs. 55), where English counts clearly exceed Urdu. In contrast, Urdu leads for S8 (128 vs. 80) and to a lesser extent for S1 (61 vs. 30), S10 (50 vs. 28), and S18 (68 vs. 58). Across all speakers, counts range from 27 to 183 in English and 15 to 128 in Urdu, with most clustering between 40 and 90 pauses in both languages. These findings suggest that within-ASU pausing tends to be heavier in English, consistent with higher processing demands in L2, yet individual variation remains substantial, with some speakers favoring Urdu.

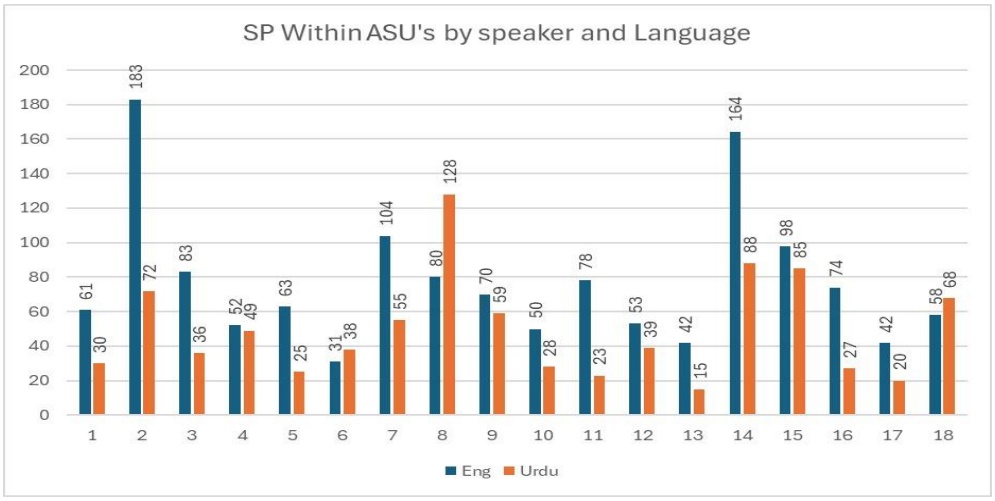

Figure 3. Frequency of within-ASU silent pauses (SP) by speaker in English (L2) and Urdu (L1).

4.2. Duration of silent pauses

The distribution of mean SP durations varied noticeably across speakers (see Fig. 4). Of the 18 speakers, 11 (61%) had longer SPs in English (L2) than in Urdu (L1), while 7 (39%) showed the reverse pattern. The largest English-over-Urdu gaps occur for S12 (720 ms vs. 370 ms), S3 (550 ms vs. 250 ms), and S17 (980 ms vs. 790 ms). Urdu exceeds English for S4–S6 and S13–S16, with the biggest differences for S4 (540 ms vs. 410 ms), S5 (470 ms vs. 350 ms), and S16 (660 ms vs. 570 ms). Across speakers, durations cluster around 400–600 ms, with a wider spread in English (320–980 ms) than in Urdu (250–790 ms). Overall, SPs tend to last longer in English, though individual profiles vary.

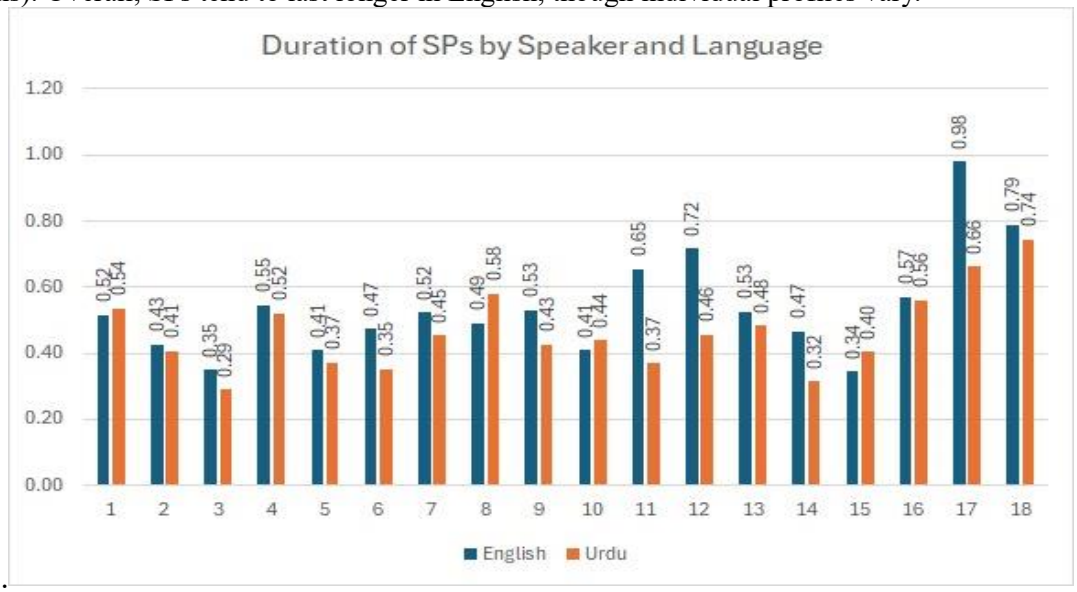

Figure 4. Mean duration of silent pauses (SP) by speaker in English (L2) and Urdu (L1).

Figure 5 presents speaker-wise mean durations of between-ASU silent pauses across 18

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speakers. English pauses are longer for 11 speakers (S3, S4, S9–S15, S17, S18), with the most pronounced ENG > UR differences observed for S17 (1.46 vs. 0.97 s), S12 (0.88 vs. 0.42 s), and S10 (0.88 vs. 0.40 s). Urdu pauses exceed English for 7 speakers (S1, S2, S5–S8, S16), most noticeably S2 (0.74 vs. 0.53 s), S5 (0.61 vs. 0.47 s), S8 (0.74 vs. 0.65 s), and S16 (0.97 vs. 0.84 s). Across the dataset, English durations span 0.38–1.46 s, while Urdu ranges from 0.29–1.12 s, with most speakers clustered in the 0.5–0.8 s interval. These results indicate a general tendency for between-ASU pauses to last longer in English, consistent with increased planning demands in L2, though several speakers reveal the opposite trend, underscoring strong individual variation.

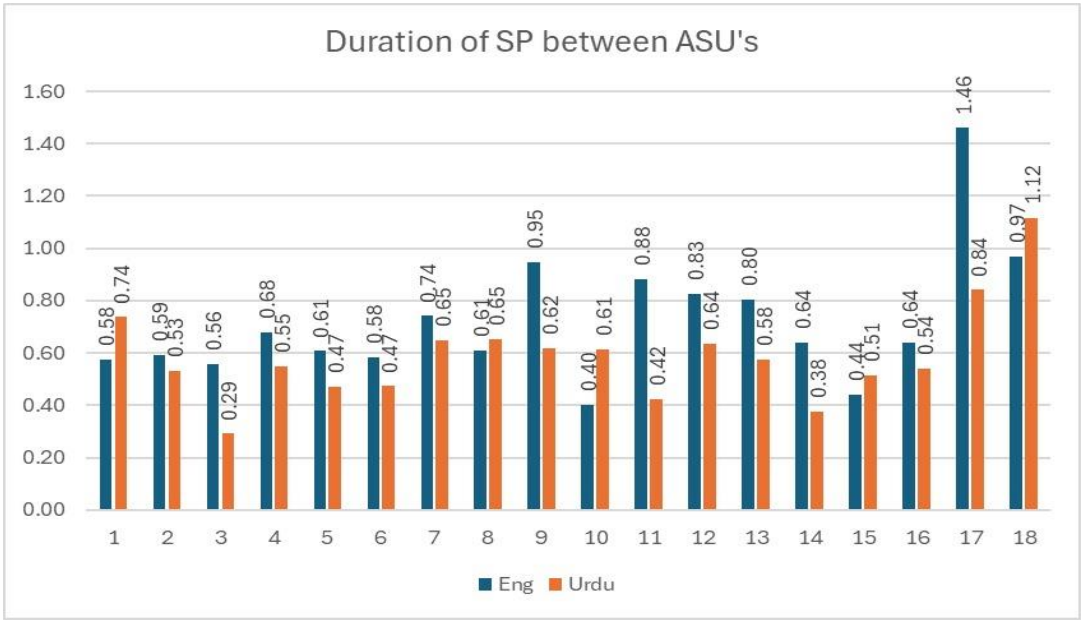

Figure 5. Mean duration of between-ASU silent pauses (SP) by speaker in English (L2) and Urdu (L1).

Figure 6 highlights speaker-wise mean durations of within-ASU SPs. Overall, English pauses are longer for most speakers, with especially large ENG>Urdu contrasts for S11 (660 ms vs. 320 ms), S12 (670 ms vs. 330 ms), S9 (560 ms vs. 410 ms), and S8 (550 ms vs. 410 ms). Urdu matches or slightly exceeds English for a smaller subset (S2, S13, S16). Durations cluster around 350–550 ms, with a broader spread in English (310–750 ms) than in Urdu (290–690 ms). In sum, within-ASU pauses tend to last longer in L2 English, though individual profiles vary.

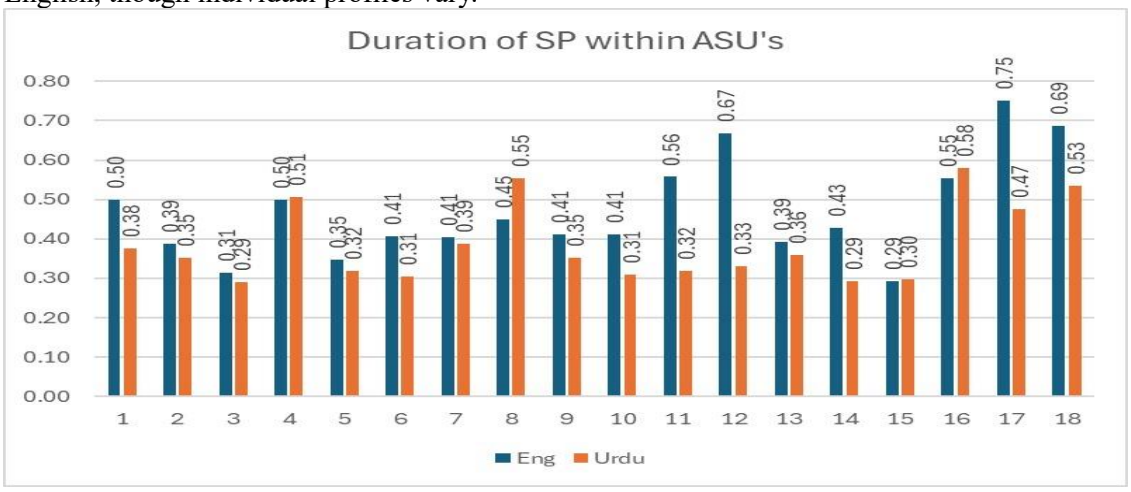

Figure 6. Mean duration of within-ASU silent pauses (SP) by speaker in English (L2) and Urdu (L1).

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5. Discussion and Conclusion:

Consistent with prior research showing elevated within-unit pausing in L2 speech (Riazantseva, 2001; Skehan & Foster, 2007; Tavakoli, 2011; de Jong, 2016), our data reveal that overall silent pause counts are higher in English (L2) for most speakers (12/18; 67%). When pauses are indexed to ASUs, a clearer asymmetry emerges: between ASU pauses are more often higher in Urdu (L1) (11/18; 61%), while within-ASU pauses are more often higher in English (14/18; 78%). This distribution suggests that Urdu tends to place pauses at structural junctures, whereas English tends to introduce them inside units—a pattern widely linked to differences in production processes between L1 and L2 (Davies, 2003; Freed, 1995; Lennon, 1990; Bosker, 2014; de Jong, 2016; Kahng, 2014; Skehan & Foster, 2012; Tavakoli, 2011).

Mean pause durations also vary by language and placement. Across speakers, pauses last longer in English for a majority (11/18; 61%). This is especially evident for within-ASU pauses, which are generally longer in English, consistent with a heavier formulation load during L2 encoding (Cenoz, 1998; Lennon, 1984; Wood, 2010). For between-ASU pauses, English shows longer means for more speakers (11/18; 61%), but a sizeable minority display longer durations in Urdu, underscoring individual variability and the role of message-planning demands at boundaries (Goldman-Eisler, 1968; Ferreira, 1993, 2007; Swerts, 1998).

Interpreting these patterns within accounts that distinguish conceptualization from linguistic encoding helps clarify the L1–L2 contrast. Boundary pauses are typically associated with message planning, whereas within-unit pauses are more closely tied to lexical and grammatical encoding (Skehan et al., 2016; Yan et al., 2021; de Jong, 2015, 2016; Kahng, 2014). Our results fit this view: Urdu (L1) shows more frequent boundary pausing, reflecting planning aligned with grammatical junctures, while English (L2) shows more—and longer—within-ASU pauses, reflecting greater difficulty in lexical and syntactic formulation. This broad pattern confirms earlier observations that L2 fluency diverges from L1 not only in amount but also in distribution of pausing (Bosker, 2014; de Jong, 2016; Kahng, 2014; Skehan & Foster, 2012; Tavakoli, 2011), while extending the evidence base to Urdu, a language rarely examined in the disfluency literature.

It is worth noting that the relatively frequent boundary pausing in Urdu (compared with English) diverges from some monologic studies (e.g., de Jong, 2016), which reported more similarity at boundaries and sharper increases within units for L2. Task type (dialogic conversation here vs. narrative or monologic elicitation in prior studies), language pairing (Urdu–English), and methodological choices (≥150 ms threshold) likely contribute to this difference. Taken together, these findings show that L2 English is characterized by more frequent and longer within-unit pauses, while L1 Urdu favors boundary-aligned pausing. The results reinforce placement-sensitive models of disfluency and extend them to a bilingual Urdu–English context.

6. Limitations and Future Directions

This study offers new evidence on pausing patterns in bilingual Urdu–English speech, but several limitations should be noted. First, the speaker sample was relatively small (18 speakers, all females), which restricts the extent to which the findings can be generalized. Second, the study focused on a single language pairing, Urdu–English, which carries its own typological and sociolinguistic particularities. Finally, methodological choices such as ASU segmentation and the adoption of a ≥150 ms threshold may have shaped the observed pause counts and durations.

These limitations point toward several directions for future research. Expanding the dataset to include a larger and more diverse sample of speakers, spanning different genders and proficiency levels, would allow for more robust generalization. Moreover, cross-linguistic extensions beyond Urdu–English would determine whether the observed asymmetry between

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boundary and within-unit pausing is universal or language-pair specific.

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