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Path Under Construction: Challenges Beyond S-Framed Motion Event Construal in L2 German

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The encoding of motion events is known to be challenging for second language (L2) users, particularly if the lexicalization patterns of their first language (L1) diverge from those of the L2. This paper analyzes oral and written motion event descriptions produced by advanced L2 users of German, an information-dense satellite-framed language. Based on L2 usage and error patterns, we discuss six major challenges with respect to motion event encoding and, more specifically, path encoding. These challenges clearly go beyond event construal and the acquisition of the basic satellite-framed lexicalization pattern (e.g., verb semantics) as well as beyond expected challenges related to the use of prepositional phrases (e.g., prepositional semantics, case marking). Advanced L2 users actually particularly struggle with "smaller" path encoding devices such as particles, locative and directional adverbs, their formal and functional differentiation, their usage patterns and combinatorial potential. These aspects seem to be challenging for advanced L2 users of German with either verb-framed L1s (French, Spanish) or satellite-framed L1s (Danish, English). We therefore discuss characteristics of the target language input that might explain why L2 users struggle with identifying and differentiating these path encoding devices, their usage, and combinatorial patterns. We sketch potential implications for L2 teaching.

Keywords: motion events, path encoding, German as a second language, satellite-framed, directional adverbs

INTRODUCTION

Cross-linguistic variation is well documented in the spatial language domain (e.g., Slobin, 2003). Language-specific event construal, linguistic categories, and verbalization preferences have primarily been investigated, from the point of view of first, bilingual, and second language acquisition and usage, for spontaneous motion events (e.g., Inagaki, 2001; Slobin, 2004; Ochsenbauer and Hickmann, 2010; Daller et al., 2011; Bauer, 2012; Eskildsen et al., 2015; Pavlenko and Volynsky, 2015; Hijazo-Gascón, 2018; Woerfel, 2018; Filipović and Ibarretxe-Antuñano, 2019), but, in general, the main distinctions also apply to localization (cf. Bryant, 2012; Harr and Hickmann, 2016) and caused motion (cf. Gullberg, 2009; Heyvaert, 2018; Ji and Hohenstein, 2018).

Language-specific encoding preferences have been described in terms of so-called *lexicalization patterns* (Talmy, 1985, 2000) or *conceptualization patterns* (Treffers-Daller and Tidball, 2016, p. 146) and the corresponding degrees of manner (and/or path) salience (Slobin, 2004). Typically, these distinctions focus on two main aspects of *information packaging*: First, *information focus,* that is, which aspects of events are typically selected for verbalization and, in particular, is manner

of motion typically/necessarily expressed (Cadierno, 2008, p. 247; Harr, 2012, p. 152)? Second, *information locus*, that is, which linguistic means are typically used to express different components of the event and, in particular, if manner of motion is expressed, is this aspect expressed in the verb root (e.g., *to run, to dance, to crawl*) or outside, for example, in gerunds (e.g. *to enter the house running*; cf. Cadierno, 2008, p. 247; Harr, 2012, p. 153)?

A major distinction is typically made between so-called verb-framed (V) and satellite-framed (S) languages (Talmy, 1985, 2000). In V-languages, the main component of motion events, that is, path, is expressed in the main verb (e.g., *to cross, to enter, to exit, to descend, to ascend*). Manner is usually only expressed if this semantic component is surprising and/or salient (e.g., if someone, instead of walking, dances across the street); in this case, manner may be expressed in a gerund (e.g., *running*) or an adverb (e.g., *quickly*). Even if speakers of V-languages may thus encode manner of motion outside of the finite verb, they encode manner less frequently than users of S-languages (e.g., Treffers-Daller and Tidball, 2016). V-languages also tend to have a smaller lexicon of manner-of-motion verbs than S-languages (Slobin, 2004, p. 237) and, most importantly, manner verbs may not be used with telic paths, that is, in boundary-crossing contexts (e.g., *to run into a house*; so-called boundary-crossing constraint, Aske, 1989; Özçalişcan, 2015). By contrast, in S-languages, the root of the finite verb typically (although not necessarily) encodes information about manner of motion (e.g., *to march, to walk, to run, to scuttle, to drive*), while path is typically expressed in different types of satellites such as directional adverbs (e.g., *up, down*), verbal prefixes and particles (e.g., *untergehen* 'to under-go'); prepositional phrases (PPs; e.g., *into the house, over the fence*) may count as satellites in a broader sense (Beavers et al., 2010).

Additionally, more detailed research has taken into account not only larger numbers of languages as well as more typologically distinct languages but also differences within established typological language families. It shows that the distinction between V- and S-languages is not a categorical one, but that there are substantial amounts of both intra-typological and language-internal variation [e.g., Hijazo-Gascón (2020) on French, Italian, and Spanish; Berthele (2006) on different varieties of standard and non-standard German; Pavlenko and Volynsky (2015) on S-framed English and Russian; Lewandowski (2020b) on S-framed German and Polish, V-framed Spanish]. Languages can thus be situated, metaphorically speaking, on a cline between "typical" V-languages and "typical" S-languages. "Typical" S-languages are languages with a high degree of manner salience: Manner of motion is highly frequently, if not obligatorily, expressed (in the main verb root) when motion events are verbalized. Language users are therefore used to focusing on manner as a conceptual component of motion events when they prepare for speaking (Slobin, 2004, p. 250–252) because

> "The language or languages that we learn in childhood are not neutral coding systems of an objective reality. Rather, each one is a subjective orientation to the world of human experience, and

this orientation affects the ways in which we think while we are speaking." (Slobin, 1996, p. 91)

"Typical" V-languages, by contrast, display low degrees of manner salience in the sense that manner is infrequently expressed; language users are therefore assumed not to focus on manner when verbalizing (or preparing to verbalize) motion events, but rather on the path component (Slobin, 2004, p. 253). So-called equipollent languages are languages that are situated at some middle point of the cline (or even outside of the simple cline) because they display similar degrees of manner and path salience (Slobin, 2004, p. 228, 249).

In a nutshell, the so-called *Thinking-for-Speaking (TfS)* hypothesis (Slobin, 1996; Cadierno, 2012; Bylund and Athanasopoulos, 2015) states that the language(s) speakers are growing into early in their life shape(s) these speakers' information processing and attention to particular components of (motion) events and that it may be difficult to restructure these routines when learning additional languages later in life:

> "[E]ach native language has trained its speakers to pay different kinds of attention to events and experiences when talking about them. This training is carried out in childhood and is exceptionally resistant to restructuring in adult second-language acquisition." (Slobin, 1996, p. 89)

Children have been shown to respect and apply the main lexicalization patterns of their L1 from early on (cf. Bowerman and Choi, 2001; Ochsenbauer and Hickmann, 2010; Harr and Hickmann, 2016), even if their utterances are not yet completely adult-like in terms of information density (see below). The effects of these mental routines of information processing and information packaging have been described for verbal tasks, speech-accompanying gestures (e.g., Gullberg, 2009; Alferink, 2015), and some types of non-verbal tasks such as event similarity judgements (e.g., Montero-Melis and Bylund, 2017; Ji and Hohenstein, 2018). From a TfS point of view, learning a second or foreign language (L2) is thus challenging because first language (L1) routines of information processing and attention allocation are strongly entrenched (so-called *learned attention*, Ellis, 2006). In L2 acquisition, these routines of information processing and attention allocation have to be restructured (in a process of *rethinking for speaking*, Robinson and Ellis, 2008) if event construal, constructional patterns, lexicalization preferences, cues, and/or categories diverge between the L1 and L2. As a consequence, L2 users may miss out even on frequent central cues, categories, and lexicalization patterns in the L2 input if these are (non-salient, complex, abstract, and) different from their L1 routines: "features in the L2 input, however available as a result of frequency, recency, or context, [may] fall short of intake because their processing is shaped by the L1" (Ellis, 2007, p. 24).

In addition to research in the TfS paradigm and its central concept of *information packaging*, research in the L1 and L2 domains increasingly takes into account aspects of *information density*, that is, the number of semantic components expressed within one utterance/clause (cf. Harr and Hickmann, 2016; Madlener et al., 2017; Goschler, 2019;

Madlener-Charpentier, 2022). This is because S-languages have been found to be more information-dense than V-languages, condensing more aspects of information into single utterances. In particular, in S-languages, path and manner of motion are typically expressed in the same clause (e.g., *he ran into the house*). Additionally, several ground elements/path satellites may be attached to a single verb (cf. Zlatev et al., 2021, p. 58), resulting in complex path descriptions [e.g., *he ran down the stairs (1) through the hallway (2) out of the door (3) into the garden (4)*]; such elaborate path descriptions are frequent in S-languages in general (Cadierno, 2004; Treffers-Daller and Tidball, 2016) and in German in particular (see below). In V-languages, by contrast, each path component needs to be expressed in a separate (path) verb, e.g., *il a descendu les escaliers (1) (en courant), a traversé l'entrée (2), est sorti de la maison (3) et est parti dans le jardin (4), toujours en courant* 'he descended the stairs (running), crossed the hallway, exited the house and went into the garden (still running).' Madlener et al. (2017) show that dense information packaging may be challenging even in L1 acquisition; for instance, in the case of S-framed German, global utterance complexity[1] actually increases way beyond the preschool years.

It has thus been assumed that learning an S-framed L2 such as German is particularly challenging for speakers with a V-framed L1, as they need to attune to the high degrees of manner salience of S-languages (routinely expressing manner of motion in the main verb, also in boundary-crossing situations, e.g., Bauer, 2012; De Knop and Gallez, 2013) and they additionally have to learn to more densely compress different aspects of information into very compact spatial language utterances; this has also been discussed for very advanced bilingual speakers who are strongly induced into a bilingual mode (Berthele and Stocker, 2016). Reversely, it has also been shown that it can be challenging for L2 users of V-languages with an S-framed L1 to learn to reduce the use of manner-of-motion verbs (or, more generally speaking, to reduce information density) and to respect the boundary-crossing constraint (cf. Cadierno, 2004; Hendriks and Hickmann, 2015; Treffers-Daller and Tidball, 2016). Even within V- and S-languages, that is, without having to restructure the main lexicalization patterns, learning to increase/reduce information density can be challenging for L2 users (e.g., Madlener-Charpentier, 2022).

Now, German is assumed to be a rather typical satellite-framed language with dense options of information packaging, in particular with respect to path encoding (cf. Madlener et al., 2017). The most current pattern of verbalizing motion events conflates the components of *manner* and *motion* in the main verb [67% of L1 German motion event descriptions (range 61–83%)

in Madlener-Charpentier (2022), as compared to 61% (range 36–79%) in L1 English]. Path is typically expressed in PPs (1), PPs with embedded locative adverbs (2), and different types of Talmyan satellites in the narrow sense, for instance, directional adverbs (3), verb particles[2] that separate from the main verb (4), verb prefixes that are not separable (5) as well as possibly rather complex combinations of two or more of these linguistic means (6–9); such combinations may combine path-encoding components either referring to the same spatial relation (7) or different spatial relations and/or path sub-components (8):

(1) *Der Taucher springt in den Swimmingpool.*
     The.nom diver jump.3sg into the.acc swimming-pool
(2) *Er rennt nach draußen.*
     He.nom run.3sg to outside
(3) *Er springt hinein.*[3]
     He.nom jump.3sg away.from.origo-in
(4) *Er taucht auf.*
     He.nom dive.3sg up
(5) *Er durchschwimmt den See.*
     He.nom through-swim.3sg the.acc lake
(6) *Er springt über die Klippe hinunter ins Wasser.*
     He.nom jump.3sg over the.acc cliff towards.origo-down into-the.acc water
(7) *Er schwimmt in die Höhle hinein.*
     He.nom swim.3sg into the.acc cove away.from.origo-in
(8) *Er taucht unter dem Felsen durch.*
     He.nom dive.3sg under the.dat rock through
(9) *Er schwimmt in der Höhle (he)rum.*
     He.nom swim.3sg in the.dat cove neutralized.form-around[4]

PPs, directional adverbs, and their combinations can be used with manner verbs for translational bounded/telic (e.g., 1–3, 6–8) and non-translational/atelic motion events (9); there is thus no boundary-crossing constraint as discussed for V-languages (Özçalişcan, 2015; Alonso, 2016). Yet, translational and non-translational motion are still distinguished in German, namely by case assignment of two-way prepositions [so-called *Wechselpräpositionen*, such as *auf* 'on(to)', *in* 'in(to)', or *unter* 'under'], which call for accusative marking in translational motion events (e.g., 1, 7), whereas they call for dative

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[1]Global complexity evaluates the structural integration of information across the conceptual slots of an utterance (Madlener et al., 2017, p. 757), that is, language users' preferences/abilities with respect to the combination of conceptually and/or structurally complex *local* slot-fillers into *globally* complex utterances (Madlener et al., 2017, p. 768). Thus, globally complex utterances contain locally complex slot-fillers in several or all constructional slots, e.g., *The little horse* (figure) *jumps* (motion + manner) *over the fence onto the street* (path/ground), as opposed to globally less complex, less information-dense utterances, e.g., *He* (figure) *goes* (motion) *down* (path) (ibd.).

[2]With 'verb particle' (*Verbpartikel*), we refer to elements such as *ab-* 'off', *aus-* 'out' or *ein-* 'in', which originated in prepositions or old adverbs and constitute, in Modern German, lexicalized units with their verb stems (e.g., *auftauchen* 'to surface'/'to bob up', *einsteigen* 'to get in/on'). By contrast, we use the term 'directional adverb' (*Richtungsadverb*) for satellites that, in spatial contexts, do not constitute lexicalized units with any verb stem and can therefore be combined almost unrestrictedly with any kind of motion verb (e.g., *hinaus/heraus/raus* 'out' in *raus rennen* 'to run out', *raus klettern* 'to climb out', *raus krabbeln* 'to scuttle out', *raus springen* 'to jump out' etc.). The exact boundaries between the categories 'verb particle', 'adverb' and 'adposition' remain a controversial issue (see e.g., Harnisch, 1982; Krause, 1998b).

[3]Adverbs such as *hinein* (3) or *hinunter* (6) consist of two spatial components: deictic (*hin-* = away from speaker/origo; *her-* = towards speaker origo) and conformation or vector [*-ein* 'in', (3); *-unter* 'down', (6)].

[4]We gloss as 'neutralized.form' all forms of (etymologically speaking) deictic components that have lost their deictic meaning (e.g., *herum* 'around'). In the spoken standard, *hin-* and *her-* forms are typically reduced to a neutralized form starting with /r-/ (e.g., *rauf* 'up').

marking in non-translational motion events (9) as well as in localization events.

By contrast, the linguistic means and options to encode path partly diverge from the repertoire described above in the case of translational non-bounded, that is, incremental motion events (e.g., *to run up the stairs/a hill, to climb up a rock*). As expected, incremental paths may be encoded in directional adverbs (10–11). Interestingly, however, PPs with embedded noun phrases (NPs) may not encode incremental paths in translational motion events, either alone (12) or in combination with directional adverbs (13). In contrast to other languages such as Spanish or French, simple NPs may not encode incremental path (14) either, but can only be used in this case in combination with directional adverbs (11) or specific types of PPs (15):

(10) *Er klettert rauf.*
     He.nom climb.3sg neutralized.form-up
(11) *Er rennt die Treppe rauf.*
     He.nom run.3sg the.acc stairs neutralized.form-up
(12) #*Er geht auf die Treppe.*
     He.nom go.3sg onto the.acc stairs
(13) #*Er geht auf die Treppe rauf.*
     He.nom go.3sg onto the.acc stairs neutralized.form-up
(14) **Er rennt die Treppe.*
     He.nom run.3sg the.acc stairs
(15) *Er rennt die Treppe nach oben.*
     He.nom run.3sg the.acc stairs to at.the.top

L2 users thus have to conceptually distinguish between translational bounded (e.g., 1–3, 6–8), non-translational (e.g., 9), and translational-incremental motion events (e.g., 11) in order to identify the "right" array of linguistic means and options available for path encoding. Overall, the input and the linguistic experience of L2 users of German display a substantial level of variation and variability within the S-framed lexicalization pattern. One of the crucial challenges for L2 users might thus actually be to formally and functionally distinguish between the different linguistic means for path encoding, their relationship with different event categories, their contexts of use, and their combinatorial potential. We therefore assume that the challenges of acquiring target-like competencies with motion event descriptions and particularly with path encoding in German as an L2 will go way beyond the manner-path dichotomy typically discussed in the context of acquiring S-framed L2s, that is, the reconstrual of the S-framed lexicalization pattern/information packaging, including manner salience (e.g., Cadierno, 2004; De Knop and Dirven, 2008; Treffers-Daller and Tidball, 2016), particularly highlighted as a challenge for L2 German (De Knop and Gallez, 2013). So far, however, only a few studies have empirically investigated more in detail the encoding of path in motion event descriptions in L2 German.

Goschler (2019) analyzes motion event descriptions by intermediate to advanced adult L2 users of German with typologically different first languages (S-framed: Polish, Russian; V-framed: Turkish). With respect to path encoding, she shows that L1 Turkish speakers use more (tokens and types of) German path verbs, that is, they encode path more often in the verb than L1 users of German and L2 users of German with an S-framed L1 (Goschler, 2019, p. 97). However, they do not significantly differ from L1 German speakers in terms of path complexity (i.e., the number of path components expressed in a single clause; Goschler, 2019, p. 100). Even in boundary-crossing situations, L2 users of German with L1 Turkish use typical S-framed combinations of manner verbs and path satellites as often as L1 users of German and L2 users of German with an S-framed L1 (Goschler, 2019).

Scheirs (2015) investigates the acquisition of German S-framed patterns by L1 speakers of French. Her study shows that type and token frequencies of prepositions, directional adverbs, and verb particles used for path encoding in motion event descriptions increase with proficiency level (A1 to C2). Scheirs (2015) also finds that path complexity as well as the correctness of case marking in PPs encoding path increase with proficiency level. However, even advanced L2 users still differ from L1 users of German: They use fewer directional adverbs as well as fewer combinations of PPs and directional adverbs in their motion event descriptions; they also still struggle with case marking in PPs to some extent.

In several studies on the encoding of paths in L2 German, Liste Lamas (2015a, 2016a,b) shows that L1 speakers of Spanish with different levels of proficiency have difficulties with distinguishing between different linguistic means to encode paths in L2 German and to identify, for instance, the precise forms and functions of directional adverbs, a category that does not exist in Spanish. The L2 users rarely use directional adverbs in their event descriptions; rather, they tend to encode paths in PPs or in (mostly incorrect) verb particles (e.g., *aus* 'out' instead of the directional adverb *raus* 'out').

Finally, Madlener-Charpentier (2022) shows that for L2 users of German with another S-language (namely English) as L1, getting the main (and shared) lexicalization patterns "right" is relatively easy (even if the availability of precise manner-of-motion verbs might be reduced). However, reaching target-like levels of utterance complexity and information density might still be a challenge even for advanced learners. In other words, even for L2 users who do not have to restructure the very basic lexicalization patterns, the verbalization of motion events and particularly the expression of (complex) paths might still demand certain levels of *re-thinking for speaking* (cf. also Pavlenko and Volynsky, 2015). In particular, L2 users of German (with L1 English) produce lower proportions of relatively complex path types, where several path satellites/ground elements cumulate around a single verb (Madlener-Charpentier, 2022, p. 250, 253), and also lower proportions of syntactically complex ground elements within more complex path types than L1 users of German (and than L2 users of English with L1 German; Madlener-Charpentier, 2022, p. 252).

However, several essential questions still remain largely unanswered with respect to L2 motion event encoding in L2 German: How do L2 German users with different L1s deal with the large array of linguistic means and in particular with the "smaller" devices such as particles and adverbs? What can usage and error patterns tell us about L2 users' ability to

differentiate between satellite types, to acquire their respective form-meaning mappings and usage restrictions, and to tackle the combinatorial potential of specific path encoding devices? Interestingly, these challenges seem to be neglected in teaching too, as L2 German learning and teaching materials mostly focus on prepositional semantics, case assignment with two-way prepositions, and word order with respect to particle verbs. If mentioned at all, directional adverbs, functional distinctions between the different path encoding devices, their usage patterns, and their combinatorial potential are tackled only superficially (Liste Lamas, 2015b; Althoff, 2019). Our study thus delves deeper into the question of how L2 users actually deal with the diverse challenges of path encoding in German.

MATERIALS AND METHODS

The present analyses are based on data from two distinct data sets. The first set consists of L2 German data elicited from advanced L1 Spanish and L1 Danish speakers (proficiency levels B2 to C2), as well as the corresponding L1 German, Spanish, and Danish baselines. L1 and L2 participants orally retold the cartoon *Canary Row* (Freleng, 1950), broken down into 10 sequences, and provided written descriptions of 44 short video clips depicting 14 types of paths (Liste Lamas, 2016b, in preparation). The second set consists of L2 German data elicited from advanced L1 French and L1 English speakers (proficiency levels B2 to C2), as well as the corresponding L1 German, French, and English baselines. L1 and L2 participants orally described 20 short sections of *La Linea* cartoons (Cavandoli, 2003) and provided oral retellings of two wordless picture books (Mayer, 1969; Haughton, 2014; cf. Madlener-Charpentier, 2022).

The data (sub-)sets certainly differ with respect to elicitation methods (e.g., stimulus sets, oral vs. written descriptions), group sizes, L2 user characteristics (e.g., L1s, see Section *Participants and Linguistic Background* below), and overall size (L1 Spanish: 1,114 clauses; L1 Danish: 1,150 clauses; L1 French: 644 clauses; L1 English: 579 clauses). They are, however, comparable with respect to proficiency levels (advanced: B2-C2)[5], L1 types (in each data set, half of the L2 users have a V-framed L1, French or Spanish, the other half has an S-framed L1, Danish or English), and overall size with respect to typological background (V-framed: 1,778 clauses overall; S-framed: 1,729 clauses overall). The L1 baselines in each of the two data sets are directly comparable to the corresponding L2 data in the same data set, as they were elicited with the same stimuli and methods.

Given the differences mentioned above, we do not claim that the data allow for any direct, statistical comparison across the two data sets. However, we would like to claim that the V- and S-framed data subsets are directly comparable within the

two data sets (L2 German users with L1 Spanish vs. Danish; L2 German users with L1 French vs. English), that the data sets are overall complementary, and that the analysis of the two data sets combined increases the meaningfulness and reach of the findings. We actually find very similar L2 usage and error profiles across the data subsets (e.g., oral vs. written; cartoon vs. picture book retellings) as well as across the two data sets. This suggests that our findings are not due, for instance, to specific task effects, elicitation methods, stimulus types, or to the choice of specific L1s from the different typological clusters (e.g., V-framed Spanish vs. French), but that they should potentially generalize well beyond the given data set and the groups of L2 users discussed here, and therefore be all the more meaningful with respect to pedagogical implications and applications.

Participants and Linguistic Background

We analyze and compare motion event descriptions by L2 users with typologically different linguistic backgrounds (S-framed: L1 English: $n = 6$; L1 Danish: $n = 16$; V-framed: L1 French: $n = 6$; L1 Spanish: $n = 16$). We selectively compare the L2 usage patterns to L1 German baseline data.

German, English, Danish, French, and Spanish can be situated at different points of the typological continuum and display different arrays of linguistic means for path encoding, but PPs are used—although to a different extent and with different restrictions—to express path in all five languages. However, case-marking of NPs in PPs only applies to German. Speakers of S-languages, German, English, and Danish, are used to verbalize complex or multi-stage paths, that is, to use combinations of path-encoding satellites with one single verb. However, in English, combinations of PPs and directional adverbs expressing the same spatial relation, which are frequent in German and Danish, are not possible (e.g., *he runs into the house *in* but *Er rennt in das Haus rein*).

As for Danish, in translational motion events, path is typically encoded through combinations of dynamic adverbs such as *ind* 'into' and PPs such as *i* 'in(to)' + NP (e.g., *hun løber ind i huset* 'she runs into the house'). Most dynamic adverbs have corresponding, but distinct static and atelic forms. The static form is generally used for the encoding of non-translational motion and static relations (e.g., *hun løber/er inde i rummet* 'she runs/is in the room'), but can also be found in translational contexts (e.g., *hun løber inde fra huset* 'she runs from inside the house'). The atelic form is used for non-telic paths (e.g., *hun løber indad mod byen* 'she runs towards the city'). The large inventory of adverbs and their combinatorial potential allows for a more precise profiling of the different subcomponents of Path in Danish than in German and English (e.g., *Pigen går om bag en åben dør* 'The girl goes around in a semi-circle behind the open door').

In V-framed French as well as in V-framed Spanish, path is frequently encoded in transitive verbs, with ground elements being encoded as their direct objects. This is prototypically the case for CROSS motions events (e.g., *il traverse la rue* 'he crosses the street'; *cruza un puente* 's/he crosses a bridge') and incremental motion (e.g., *il monte les escaliers/sube las escaleras* 's/he ascends the stair'). In both languages, path can also be

encoded in intransitive constructions, with path information distributed across a main verb and a PP (e.g., *il monte sur un cheval* 'he moves-up onto a horse'; *entra en la casa* 's/he enters in the house'). In contexts that allow for the encoding of manner in the main verb, path is encoded in a PP (headed by a simple or complex preposition, e.g., *il saute par-dessus l'obstacle/salta por encima del obstáculo* 's/he jumps over the obstacle').

Both in French and Spanish, spatial adverbs can replace ground PPs [*il sort de la maison* → *il en sort* 'he comes out (of the house)'/*pasa por debajo del puente* → *pasa por debajo* 'he crosses under (the bridge)']. In Spanish, most spatial adverbs have a unique form which can be used for the encoding of both static and dynamic relations [e.g., *está encima (de la mesa)* 's/he is on top (of the table)', *se sube encima (de la mesa)* 's/he moves-up on top (of the table)']. In French, the directional adverb *en* 'away', a remnant of its S-framed ancestor Latin (Fagard, 2019), can only be used with a small number of reflexive motion verbs (e.g., *s'envoler* 'to fly away', *s'en aller* 'to go away', but **s'ennager* 'to swim away', **s'ensautiller* 'to hop away' etc.).

Data and Analyses

All oral data were transcribed in orthographic script; oral and written productions were split into clauses (main verbs with complements, cf. Ji et al., 2011). All clauses were coded for event type (localization, motion, caused motion, other). The following data analyses only take into account L2 productions of the event type *motion*. The relevant data sets comprise a total of 3,577 L2 clauses (S-framed: L1 English: $n = 579$; L1 Danish: $n = 1,150$; V-framed: L1 French: $n = 644$; L1 Spanish: $n = 1,114$).

These were semantically and syntactically coded [with respect to verb semantics (manner, non-manner), spatial relation (e.g., IN, OUT, ACROSS), path- and ground-encoding devices (e.g., adverbs, particles, prepositional phrases), etc][6]. We analyzed all clauses describing motion events, not only, for instance, the semantically richest clause for each event/stimulus (as, e.g., Ji et al., 2011; Ochsenbauer and Engemann, 2011; Harr and Hickmann, 2016). For the majority of the stimuli (except for the video clip descriptions), more than one sentence/clause of the event type *motion* were thus possibly analyzed with respect to information focus, information locus, information density, usage patterns, and error patterns. Each stimulus set deliberately included various repetitions of certain path types (e.g., ONTO: a cartoon character jumping onto a horse/a pedestal/a turtle's carapace; UP/DOWN: a cartoon character driving/sliding up/down a hill and/or walking up/down some stairs and/or climbing up a rainwater downpipe several times), which allows for additional in-depth analyses of intra-individual variation.

Research Question and Hypotheses

This paper reports three types of data analyses, namely (1) advanced L2 users' repertoires of path encoding devices; (2) main challenges and error patterns beyond initial learning phases; and (3) intra-individual variation in path encoding. These analyses allow us to focus on the following research question: Which

aspects of motion event descriptions and path encoding are still challenging for advanced learners of L2 German?

Hypothesis 1
Advanced users of L2 German with a V-framed L1 will have acquired the basic S-framed lexicalization pattern and will encode path outside of the verb root.

Hypothesis 2
Advanced users of L2 German will still struggle, to some extent, with case-marking in PPs, primarily with two-way prepositions.

Hypothesis 3
Advanced users of L2 German will display a well-differentiated repertoire of prepositions and fine-grained semantic distinctions, but may have difficulties with some less common prepositions and/or in distinguishing specific pairs of prepositions, e.g., *bei* 'at' and *zu* 'to' or *aus* 'out of' and *von* 'from'.

Hypothesis 4
Advanced users of L2 German will primarily struggle with the "smaller" structures, for instance, directional adverbs (such as *rein* 'in') and verb particles (such as *ein-* 'in'), particularly with the formal and functional differentiation between prepositions, particles, locative and directional adverbs.

Hypothesis 5
Advanced users of L2 German will also struggle with the identification of the precise combinatorial potential and combinatorial restrictions of PPs, particles, and adverbs, also as a function of motion event type (e.g., translational bounded vs. unbounded).

In the *Results* section, we report the relevant findings regarding advanced L2 users' challenges with path encoding in German. The *Discussion* section discusses the findings with reference to the above hypotheses and prior studies. We also discuss to what extent some of the challenges may be due to cross-linguistic differences or rather to target language characteristics, for instance, the high degree of input variability, partly intransparent distributions, and phonological similarities.

RESULTS

Based on the learner data, we identified six major challenges for advanced L2 users of German, with respect to the encoding of motion events in general and the encoding of path in particular. First, we report our findings regarding learners' overall repertoires for the encoding of paths (Section *Advanced Learners' Linguistic Repertoires*), then we report qualitative usage and error data with respect to the six main challenges (Section *Advanced Learners' Main Challenges*), and finally we report quantitative evidence for our assumption that advanced L2 users primarily struggle with verb particles, locative and directional adverbs, rather than with the PPs traditionally in focus in L2 teaching (Section *Formal and Functional Differentiation of Prepositions, Adverbs, and Particles as Advanced Learners' Major Challenge*).

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[6]For more information with respect to coding, see Madlener-Charpentier (2022) and Liste Lamas (in preparation).

Advanced Learners' Linguistic Repertoires

Advanced L2 users of German with V- or S-framed L1 backgrounds display a large range of linguistic means to encode motion events and to verbalize (primarily translational bounded and unbounded) paths. The majority of these linguistic means turn out to be target-like, but all L2 users also display a certain amount of idiosyncratic, that is, non-target-like structures.

Advanced L2 users correctly produce all of the linguistic means described in the introduction, that is, PPs (16–17), directional adverbs (18–19), and verb particles (20), as well as a range of combinations of these means (21–24) for a large range of semantic relations (e.g., UP/DOWN, IN/OUT, OVER/ACROSS); in the latter case, diverse linguistic means may reflect the same semantic relation (21: IN, 22a: IN) or different semantic relations (22b: THROUGH-UP, 23: FROM-ONTO, 24: UP-THROUGH-IN):

(16) Figure Verb PP
er krabbelt unter den Tisch (L1SPA:written:C1)
he.nom crawl.3sg under the.acc table

(17) Figure Verb PP with embedded locative adverb
diese Kugel bewegt sich dann nach rechts (L1FRE:oral:B2)
this.nom ball move.3sg itself then to right

(18) Figure Verb directional Adverb
der läuft dann runter (L1DAN:oral:C1)
he.nom run.3sg then neutralized.form-down

(19) Figure Verb NP directional Adverb
Die Frau geht die Treppe herab. (L1SPA:written:C1)
the woman.nom go.3sg the.acc stair towards.origo-down

(20) Figure Verb Particle
der steigt aus (L1ENG:oral:C1/C2)
he.nom get.3sg out

(21) Figure Verb PP Particle
er steigt in das Fahrzeug ein (L1FRE:oral:C1)
he.nom get.3sg into the.acc vehicle in

(22) Figure Verb PP directional Adverb
(a) *er springt in das Auto hinein* (L1ENG:oral:B2/C1)
he jump.3sg into the.acc car away.from.origo-in
(b) *und klettert dann durch das Rohr hoch*
(L1DAN:oral:C1/C2)
and climb.3sg then through the.acc pipe up

(23) Figure Verb PP PP
Er springt von der Mauer auf den Rasen (L1DAN:written: C1/C2)
he.nom jump.3sg from the.dat wall onto the.acc lawn

(24) Figure Verb + 3 or more satellites
damit er hoch durch das Fenster rein geht (L1SPA:oral: C1/C2)
such-that he.nom up through the.acc window neutralized.form-in go.3sg

Some (minor) constructional patterns attested in the L1 German baseline are not/rarely attested in the descriptions produced by the L2 users of German or are only used by individual L2 users, for instance,

(an-)kommen 'come' + past participle (Krause, 1994a) as in *er kommt aus dem Haus gehüpft* 'he comes hopped out of the house'.

Contrariwise, some of the L2 productions are idiosyncratic, at the periphery of or beyond the L1 norm, and not attested for the L1 German baseline.[7] These non-target-like constructional patterns as well as non-target-like encoding choices within genuinely target-like constructional patterns (e.g., errors with competing patterns involving verb particles vs. directional adverbs) are described in detail in the next sections.

Advanced Learners' Main Challenges

In terms of L2 usage and error patterns, we find that some major challenges attested in earlier studies for L2 learners of S-framed second languages in general (for an overview, see e.g., Cadierno, 2008) and of L2 German more specifically (e.g., Bauer, 2012; Scheirs, 2015) also apply to the advanced L2 users we investigate here, for instance, challenges related to verbal semantics and the verb lexicon (challenge 1) as well as to case assignment (challenge 2) and, more generally speaking, to the use of PPs and to prepositional semantics (challenge 3). Importantly, we find additional major challenges related to the forms, functions, and use as well as the combinatorial potential and restrictions of the "smaller" linguistic means such as verb particles (challenge 4), locative and directional adverbs (challenge 5), as well as to the expression of conceptually complex spatial relations (challenge 6).

Challenge 1—Information Focus/Locus, Verb Semantics, and Verb Lexicon

One central recurrent issue in the large body of research about the encoding of motion events is the question whether L2 users are able to acquire target-like lexicalization patterns and information packaging strategies when their L1 typologically differs from the L2. In other words and applied to the data analyzed in the present paper: Have L1 speakers of French and Spanish acquired the basic German S-framed pattern, do they thus encode path outside of the verb root and manner within?

As far as Path is concerned, our data only show little evidence of incorrect V-framed constructions (cf. Goschler, 2019; Lewandowski, 2020a,b for similar results). For instance, for L1 speakers of Spanish, we find some L2 uses of German manner verbs such as *klettern* 'to climb' (25) or *springen* 'to jump' (26) in transitive constructions, without any type of satellite/PP.[8] As this construction corresponds to a V-framed construction frequently used in L1 Spanish, it seems plausible to assume that the German manner verbs are incorrectly used as manner-and-path verbs by

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[7]To simplify the descriptions of the L2 productions, we use category labels based on the L1 target categories, that is, category labels associated with the respective forms (e.g., "locative adverb" for productions such as *draußen* 'outside'). However, we do not assume that L2 users necessarily choose wrong linguistic categories in these cases; they might as well just have produced an erroneous form for the intended category.

[8]Overall occurrences: *n* = 8 for *klettern* 'to climb', *n* = 7 for *springen* 'to jump', *n* = 6 for *steigen* 'to step'.

TABLE 1 | Case marking errors by L2 users of German with L1 Danish and L1 Spanish (data set 1, video clip retellings, written data).

	L2 German with L1 Danish				L2 German with L1 Spanish			
	Correct	Incorrect	Total	% errors	Correct	Incorrect	Total	% errors
Two-way prepositions	246	48	294	**16.33**	134	48	182	**26.37**
auf	42	10	52	19.23	25	7	32	21.88
hinter	36	9	45	20	16	6	22	27.27
in	50	3	53	5.66	27	9	36	25
über	45	2	47	4.26	34	2	36	5.56
unter	30	5	35	14.29	14	8	22	36.36
vor	43	19	62	30.65	18	16	34	47.06
One-way prepositions	149	13	162	**8.02**	118	22	140	**15.71**
aus (+ dative)	35	5	40	12.5	35	5	40	12.5
durch (+ accusative)	28	0	28	0	25	4	29	13.79
um (+ accusative)	42	4	46	8.7	32	10	42	23.81
von (+ dative)	44	4	48	8.33	26	3	29	10.34

the L2 speakers, in analogy to the Spanish verbs *escalar* 'to climb (up)' and *saltar* 'to jump':

(25) **Er klettert den kleinen Hügel* (L1SPA:written:C1/C2)
He.nom climb.3sg the.acc little.acc hill

(26) **Er springt eine Schranke* (L1SPA:written:C1)
He.nom jump.3sg a.acc barrier

Concerning the encoding of manner, our data show that even at high levels of proficiency and independently of the L1, L2 users may still struggle with the choice of the accurate manner verbs and thus differ from L1 users of German. In order to compensate for their vocabulary gaps, L2 users might draw on different strategies such as idiosyncratic verbs or verb constructions possibly including nonce borrowings (27) or, even at very advanced levels, the use of the verb *gehen* 'go' as an unspecific motion verb (28–29),[9] which, in certain cases, results in contextually inadequate interpretations [e.g., in (28), the character would be understood as walking over the water, whereas in fact the stimulus shows that he is paddling]:

(27) **Er hat über diese Dinge gejumpt* (L1ENG:oral:B2)
He.nom have.3sg over these.acc things jump.engl.pastpart

(28) *#und muss über das Wasser gehen* (L1FRE:oral:B2)
and must.3sg over the.acc water to.go

(29) *#die Katze versucht nochmal in die Kanalisation rauf zu gehen* (L1SPA:oral:C1/C2)
the.nom cat try.3sg again in the.acc drainage-system neutralized.form-up to.go

Challenge 2—Case Marking

As pointed out above, the issue of prepositional case marking with one-way, and particularly with two-way prepositions receives a lot of attention in textbooks of German as a foreign language and is addressed from very early on in the classroom.

Our data show that correct case-marking still represents a difficulty for the advanced L2 users in our sample, independently of their L1.

Most case-marking errors in directional PPs involve two-way prepositions. Examples (30) and (31) illustrate incorrect uses of dative instead of accusative marking for the encoding of translational motion events with the frequent two-way prepositions *in* 'in(to)' and *hinter* 'behind', which would be understood as expressing non-translational motion [e.g., walking back and forth behind the chest-of-drawers in (31)]:

(30) **sie rennt in dem Haus rein* (L1DAN:written:C1/C2)
she.nom run.3sg in the.dat house into

(31) *#sie geht hinter der Kommode* (L1SPA:written:C1/C2)
she.nom go.3sg behind the.dat chest-of-drawers

By contrast, case marking errors with one-way prepositions such as *aus* 'out of' and *von* 'from' (32–33) are less frequently attested in our data, although they still occur:

(32) **Sie springt aus das Haus* (L1DAN:written:C1/C2)
she.nom jump.3sg out the.acc house

(33) **Sie springt von das Sofa* (L1SPA:written:C1)
she.nom jump.3sg from the.acc sofa

However, **Table 1**, which exemplarily quantifies case marking errors by L2 users of German with L1 Danish and L1 Spanish (written learner productions based on video clip descriptions, that is, tightly controlled elicitations), shows that not all two-way prepositions lead to the same difficulties (e.g., *über* 'over' vs. *vor* 'in front').[10] Furthermore, the data indicate group differences (e.g., with respect to error proportions with *in* 'in' and *um* 'around' by L2 users of German with L1 Danish and L1 Spanish).

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[9]See, e.g., Berthele (2006) on the classification of German *gehen* 'to go'. For a discussion of potential lexical transfer for English native speakers see Madlener-Charpentier (2022).

[10]This analysis takes only written learner data into account, given that in oral data, the distinction is sometimes hard to make, for instance, between *ein* 'a.nom.sg.masc/neuter/acc.sg.neuter' and (reduced forms of) *einen* 'a.acc.sg.masc' and *einem* 'a.dat.sg.masc/neuter', *den* 'the.acc.sg.masc' and *dem* 'the.dat.sg.masc/neuter' etc.

Challenge 3—Prepositional Phrases: Semantics and Context of Use

When choosing PPs for the encoding of motion events, L2 users are faced with three further potential challenges, namely prepositional semantics (34–37), contexts of use of PPs (38–41), and the distinction between prepositions and adverbs (42–43).

As for prepositional semantics, a qualitative analysis of our data shows that the advanced L2 users in our sample still have difficulties, but primarily with some less common prepositions and/or in distinguishing specific pairs of prepositions (e.g., 34–37, see Scheirs, 2015 for similar results):

(34) *von* 'from' and *aus* 'out of'
      **Sie läuft <u>von</u> dem Zimmer hinaus* (L1DAN:written:C1)
      She.nom walk.3sg from the.dat room away.from.origo-out
(35) *auf* 'on' and *über* 'over'
      **Er springt <u>auf</u> dem Schranke* (L1SPA:written:B2/C1)
      He.nom jump.3sg on the.dat barrier
(36) *bei* 'at' and *zu* 'to'
      **meinen kleinen Peter, komm <u>bei</u> mir* (L1FRE:oral:C1)
      my.acc small.acc Peter, come.imp at I.dat
(37) *neben* 'beside' and *entlang* 'along'
      #*Er läuft <u>neben</u> die Mauer* (L1SPA:written:C1)
      He.nom run.3g beside the.acc wall

While some difficulties seem to be shared by all four L2 groups (e.g., 34), others are only attested in one group (e.g., 36). Some adpositions such as *entlang* 'along(side)' are used less frequently by L2 users than by L1 users of German; for instance, L2 users often rely on the preposition *neben* 'beside' for the encoding of a motion event depicting a person moving along(side) a ground (37).

L2 users also seem to have difficulties with identifying the contexts in which PPs may or must (not) be used to encode path. As illustrated in examples (38) and (39), in translational unbounded motion events (e.g., climbing some stairs), L2 users wrongly draw on PPs for the encoding of incremental path instead of using directional adverbs [e.g., *rauf* 'up' as in *die Treppe rauf gehen* 'go up the stairs' (38) or *runter* 'down' as in *den Hügel runter gehen* 'go down the hill' (39)]:

(38) #*die Frau geht auf die Treppe* (L1SPA:written:B2/C1)
      the.nom woman go.3sg onto the.acc stairs
(39) **und geht [...] dann unter die Hügel* (L1ENG:oral:B2)
      and go.3sg [...] then under the.acc hill

The reverse pattern is also attested, that is, incorrect uses of NPs denoting a ground followed by a directional adverb (to be used for incremental motion in German) instead of a PP and an optional directional adverb, see examples (40) and (41):

(40) **Sie läuft <u>den Busch herum</u>* (L1SPA:written:C1/C2)
      She.nom run.3sg the.acc bush neutralized.form-around
(41) **Sie läuft <u>das Haus rein</u>* (L1DAN:written:B2/C1)
      She.nom run.3sg the.acc house neutralized.from-in

Finally, in addition to the difficulties related to the identification of possible and necessary contexts of use of PPs, our data

also show evidence for L2 users' difficulties in distinguishing between linguistic elements that actually belong to the category 'preposition' and those that do not. Examples (42) and (43) show, for instance, occurrences of adverbs that seem to be used as prepositions; this includes cases where the adverb and the preposition are not phonetically similar [e.g., (43), see Section *Discussion*]:

(42) *raus* 'out' instead of *aus* 'out of'
      **Sie läuft <u>heraus dem Zimmer</u>* (L1SPA:written:B2/C1)
      She.nom run.3sg toward.origo-out the.dat room
(43) *oben* 'up/at the top' instead of *über* 'over'
      **LaLinea läuft <u>oben</u> [...] das Wasser* (L1ENG:oral:B2/C1)
      LaLinea walk.3sg at.the.top the.acc/nom water

Challenge 4—Verb Particles/Particle Verbs

Particle verbs are frequent in German; they consist of a verb root and a separable verb particle such as *ein-* 'in' (e.g., *eintreten* 'to enter', lit. 'to in-step'), *auf-* 'up' (e.g., *auftauchen* 'to surface', lit. 'to up-emerge'), or *unter-* 'under' (e.g., *untergehen* 'to sink', lit. 'to down-go'). Particle verbs often constitute lexicalized units with additional specialized or figurative meanings. Their spatial origins may not always be transparent to L1 users (e.g., *auffliegen* 'to be busted', lit. 'to fly up'). In many cases, the meaning of the verb and particle combination is thus not compositional (e.g., *auffallen* 'to stand out', lit. 'to fall up').

Particle verbs are usually taught early, namely with a focus on word order in the context of the so-called *Satzklammer* [the fact that particles can be separated from the finite verb by diverse elements (e.g., *aufstehen* 'to get up': *ich stehe montags immer früh auf* 'I always get up early on Mondays')], while their semantics is typically not addressed in depth. Among the particle verbs that are introduced and learned early are verbs encoding (specialized) spatial relations, such as *einsteigen* 'to get on (a bus, train etc.)', *aussteigen* 'to get off', and *umsteigen* 'to transfer'; these may thus be assumed to be strongly entrenched.

Our data show that, independently of their L1, L2 users of German do not seem to systematically differentiate—formally and/or functionally—between verb particles and directional adverbs; this results in L2 productions that contain forms that are typically associated with the category of verb particles in semantically and/or syntactically non-target-like contexts where, functionally speaking, directional adverbs would be expected. Formally speaking, some of these non-target-like uses correspond to existing particle verbs such as *untergehen* 'to sink'. However, the L2 productions do not match the contexts of use and the lexicalized meanings of these existing particle verbs [see examples (44)–(51); cf. e.g., Krause, 1994b, 1998a for a comprehensive study on the semantics of German particle verbs]:

(44) *ausgehen* 'to go out clubbing' instead of *raus gehen* 'to go out, exit'
      **Während der Nacht ist Sally [...] aus ihrem Glas <u>ausgegangen</u>* (L1FRE:oral:C1)
      during the.gen/dat night be.3sg Sally out her.dat glass out.go.pastpart

(45) *untergehen* 'to sink' instead of *runter gehen* 'to go down'
   er geht über einen Hügel und dann <u>unter</u>
   (L1ENG:oral:B2/C1)
   he.nom go.3sg over a.acc hill and then under

(46) *aussteigen* 'to get off' instead of *runter steigen* 'to climb down'
   er steigt vom Steinblock <u>aus</u> (L1SPA:written:C1/C2)
   he climb.3sg from.the.dat stone-block out

(47) *einsteigen* 'to get on' instead of *hoch klettern* 'to climb up'
   und dann er entscheidet einfach durch die Rohr <u>einzusteigen</u> (L1SPA:oral:C1/C2)
   and then he.nom decide.3sg simply/through the.acc pipe/in-to.step

(48) *auffallen* 'to stand out' instead of *runter fallen* 'to fall down'
   aber dann ist die Bienerüsche <u>aufgefallen</u>
   (L1FRE:oral:C1/C2)
   but then be.3sg the.nom bee-hive on.fall.pastpart

(49) *auskommen* 'to get along, to get by' instead of *raus kommen* 'to come out'
   und sein Kopf <u>kommt</u> from/von der andere Seite <u>aus</u> (L1ENG:oral:B2/C1)
   and his.nom head come.3sg from.engl/from the.dat other.acc side out

(50) *einkommen* 'to come in'[11] instead of *rein kommen* 'to come in'
   Eine Frau <u>kommt</u> springend ins Zimmer <u>ein</u>
   (L1DAN:written:C1)
   A.nom woman come.3sg hopping into-the.acc room in

(51) *abspringen* 'to jump off, to rebound' instead of *runter springen* 'to jump down'
   Sie <u>springt</u> von einem Sofa <u>ab</u>. (L1DAN:written:C2)
   She.nom jump.3sg from a.dat sofa off

In other cases, L2 users creatively use combinations of verb particles and verb roots that are not lexicalized units in German in order to encode spontaneous motion [as well as fictive motion, e.g., (54)]. In these cases, too, functionally speaking, directional adverbs would be expected instead of verb particles, for instance, *rein/rauf/raus klettern* 'to climb in/up/out' in (52), *runter fallen* 'to fall down' in (53), and *rein schauen* 'to look in' in (54). These are combinations that the L2 users can not have heard before, so they must either be analogically modeled on existing particle verbs or due to a lack of distinction between (the forms of) particles and directional adverbs:

(52) *ein-/*an-/*auf-/*ausklettern* 'to climb in/on/up/out'
a.   *und der Mann ist eingeklettert* (L1ENG:oral:C1/C2)
   and the.nom man be.3sg in.climb.pastpart
b.   *dann <u>kletten</u> die drei andere den Baum <u>an</u>*
   (L1ENG:oral:B2)
   then climb.3pl the.nom three other.pl the.acc tree on
c.   *und haben einfach mit Beine und Hände die/den Baum <u>aufgeklettert</u>* (L1ENG:oral:C1/C2)
   and have.3pl simply with leg.pl and hand.pl the.acc.fem/the.acc.masc tree up-climb.pastpart

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[11] *(das) Einkommen* is mainly lexicalized as a noun, meaning *(the) income*. It is rarely used as a verb, e.g., in financial contexts.

(53) *aus-/*unterfallen* 'to fall down'
a.   *und dann <u>fallen</u> sie alle vom Baum <u>aus</u>*
   (L1ENG:oral:C1/C2)
   and then fall.3pl they.nom all from-the.dat tree out
b.   *jetzt bin ich <u>untergefallen</u>* (L1FRE:oral:C1)
   now be.1sg I.nom down-fall.pastpart

(54) *einschauen* 'to look in'
   und er <u>schaut</u> ins Loch <u>ein</u> (L1ENG:oral:B2/C1)
   and he.nom look.3sg into-the.acc hole in

On a side note, we might want to question the assumption that the use of particle verbs automatically indicates an S-framed conceptualization. For instance, we find uses of *aussteigen* 'get off', literally 'step out', in contexts that have nothing to do with an OUT relation [e.g., (46)] or, although for lower competence levels only, with *stepping*. *Aussteigen* 'get off' might not be analyzed as a particle verb, but used by some L2 users as a path verb equivalent to French *descendre* 'descend, get off' or Spanish *bajar* 'descend, get off' (which is not illogical, as *descendre/bajar* actually frequently translate as *aussteigen*, primarily in the context of getting out of cars, trains, etc.). English L1 speakers, in turn, might struggle with distinguishing particle verbs such as *aussteigen* 'get off (a train etc.)', *absteigen* 'dismount, descend', and *runter steigen* 'step down, descend', given the broad range of the particle *off* across contexts (get off a train, get off a horse, get off a chair etc.).

Challenge 5—Locative vs. Directional Adverbs

L2 users also seem to struggle with formally and functionally distinguishing between locative and directional adverbs (e.g., locative *drin* 'inside' vs. directional *rein* 'in'). Making this distinction might be particularly difficult because some adverbial forms are functionally ambiguous (e.g., *d(a)rauf* 'up'/'on top': locative *Er sitzt d(a)rauf* 'he is sitting there-on'; directional *Er springt d(a)rauf* 'he jumps there-upon').

Interestingly, learners are more likely to use locative adverbs instead of directional ones than vice versa; for instance, the group of L2 users of German with English as a first language produces 11 locative adverbs where directional ones would be needed (for 33 correct locative adverb uses across motion and localization descriptions), but only 5 directional adverbs instead of locative ones in contrast to 60 correct uses of directional adverbs; the L1 French group produces 16 errors with locative instead of directional adverbs (for 39 correct locative adverb uses overall), but none with directional instead of locative particles (for 69 correct uses of directional adverbs). Incorrect uses of locative adverbs concern all semantic relations, for instance, IN (55), OUT (56), OVER (57), and UP/DOWN (58–59):

(55) #*weil er will <u>darin</u> springen und schwimmen* (L1FRE: oral:C1)
   because he.nom want.3sg there-inside to.jump and to.swim
(56) #*weil er <u>draußen</u> geht* (L1SPA:oral:B2/C1)
   because he.nom outside go.3sg
(57) #*Die geht einfach <u>drüben</u>* (L1FRE:oral:C1)
   She.nom go.3sg simply over.there

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(58) *Der Mann geht <u>unten</u> von den Steinblock (L1DAN: written:B2/C1)
the.nom man go.3sg at.the.bottom from the.acc rock

(59) *er geht <u>oben</u> und <u>unten</u> (L1ENG:oral:B2/C1)
he.nom go.3sg at.the.top and at.the.bottom

In contrast to the well-attested use of locative adverb forms in contexts where directional adverbs would be expected (55–59 above), the reverse case of learners using directional instead of locative adverbs seems to be rather idiosyncratic, as within the French-English data set, for instance, only 5 occurrences are attested, by two individual speakers, e.g. (60),

(60) *ob man da <u>rein</u> schwimmen kann (L1ENG:oral:B2/C1)[12]
whether one.nom there neutralized.form-in to.swim can.3sg

Two of these uses concern a directional adverb form within a PP (61), where, in functional terms, either a directional adverb alone (here: *runter* 'down') or a PP with an embedded locative adverb (here: *nach unten* 'to at.the.bottom') would be expected; from the native speaker perspective, path is thus redundantly and incorrectly encoded twice in these cases:

(61) *er geht wie ein Achterbahn über Hügel und dann auch <u>nach runter</u> (L1ENG:oral:B2/C1)
he.nom go.3sg like a.nom roller-coaster over hill.pl and then also to down

Challenge 6—Expression of Conceptually Complex Spatial Relations

So far, we have focused on conceptually simple spatial relations. However, conceptually more complex spatial relations [such as walking through under a bridge (62) or coming out from behind a door (63)], which must be encoded by combining different types of path satellites, may also represent a challenge for the L2 users in our sample:

(62) Er läuft <u>unter der Brücke hindurch</u> (L1GER)
He.nom walk.3sg under the.dat bridge away.from.origo-through

(63) Die Frau kommt <u>hinter der Tür hervor</u> (L1GER)
The.nom woman come.3sg behind the.dat door towards.origo-forward

For instance, with respect to the video clip descriptions (L1 Spanish, L1 Danish), only four L2 users (out of 32) produce the intended target description for the motion event illustrated in (62), while other L2 users rely on constructions with the preposition *unter* 'under' and an NP with dative (non-translational motion) or accusative (translational motion) marking without any directional adverb; these L2 productions only describe parts of the event [e.g., (64) would be interpreted as describing someone walking until s/he is under the bridge] or a different event [e.g., (65) would be interpreted as describing someone walking around under a bridge] and are not attested in the L1 baselines:

(64) #Er läuft <u>unter die Brücke</u> (L1SPA:written:C1)
he.nom walk.3sg under the.acc bridge

(65) #Er geht <u>unter der Brücke</u> (L1DAN:written:C1)
he.nom walk.3sg under the.dat bridge

Descriptions of conceptually complex motion events are rare in the less controlled elicitations, although there is a comparable scene in the *LaLinea* cartoons, where, for instance, first a mouse and then a cat run through under the main character's legs; most L2 users ($n = 7/12$) choose not to verbalize this part of the scene at all; only one description is target-like if *Füße* 'feet' is to be understood as *Beine* 'legs' (66), which is actually possible in some varieties of German; four other L2 users at least try to verbalize the event in question, but get the description wrong at some point (e.g., 67–68). Similarly to (64–65), the L2 productions either describe different events from the event shown in the cartoon stimulus [e.g., running until arriving under LaLinea (67)] or only parts of the event [i.e., ending up behind the man or his legs (68)] and are not attested in the L1 baseline either:

(66) und rennt <u>unter den Füßen durch</u> vom Männchen (L1FRE: oral:B2)
and run.3sg under the.dat foot.pl through of-the.dat little-man

(67) #das Maus hat <u>unter LaLinea</u> gerannt (L1ENG:oral:B2/C1)
the.nom mouse have.3sg under LaLinea run.pastpart

(68) #die Maus geht einfach <u>hinter die Beine der Charakter</u> (L1FRE:oral:C1/C2)
the.nom mouse go.3sg simply behind the.acc leg.pl the.gen person.nom

Concerning the encoding of the conceptually complex motion event illustrated in (63), the number of target-like descriptions by the L2 users with L1 Spanish and L1 Danish is also very low ($n = 1/16$, $n = 3/16$). However, in this case, we find more variation in the constructions and linguistic means used and, thus, in the error patterns observed (69–72). In (69), a wrong construction is used (with a locative adverb *hinten* 'behind' instead of the expected preposition *hinter* 'behind'); in (70) a wrong preposition is used (*aus* 'out' instead of *hinter* 'behind', leading to the interpretation of the figure stepping out of the door), and in (71–72), the case marking is wrong (accusative instead of dative, which is not surprising, as the event is one of translational motion, which usually calls for accusative marking by two-way prepositions):

(69) *sie kommt <u>von hinten der Tür nach vorne</u> (L1DAN:written: B2/C1)
she.nom come.3sg from behind the.dat door to in-front

(70) #sie kommt <u>raus aus der Tür</u> (L1SPA:written:B2/C1)
she.nom come.3sg neutralized.form-out from the.dat door

(71) *sie kommt <u>hinter die Tür heraus</u> (L1SPA:written:C1/C2)
she.nom come.3sg behind the.acc door toward.origo-out

(72) *sie tritt <u>von hinter die Tür hervor</u> (L1DAN:written:C2)
she.nom step.3sg from behind the.acc door toward.origo-in.front

We also find some alternative descriptions, in which the description of the originally depicted complex relation is

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[12]Interestingly, all attested errors concern the directional adverb *rein* 'in'; this might be due to this adverb being particularly frequent or phonetically salient.

TABLE 2 | Proportions of major categories of path encoding devices in L2 productions (data sets 1 and 2, cartoon and picture book retellings, oral data); columns "both" represent learner productions where choices are both semantically and functionally incorrect (e.g., *anklettern* lit. 'on-climb' for *rauf klettern* 'climb up').

	Total	Correct	Incorrect				% errors			
			Total	Semantic	Category/functional	Both	Total	Semantic	Category/functional	Both
L2 German with L1 English (579 clauses)										
Directional adverbs	97	93	4	1	3	0	4.1	1.0	3.1	0
Locative adverbs	36	12	24	0	24	0	66.7	0	66.7	0
Particles	97	67	30	3	19	8	30.9	3.1	19.6	8.3
PPs	256	225	31	20	11	0	12.1	7.8	4.3	0
L2 German with L1 French (644 clauses)										
Directional adverbs	91	88	3	3	0	0	3.3	3.3	0	0
Locative adverbs	26	7	19	1	18	0	73.0	3.8	69.2	0
Particles	114	98	16	3	10	3	14.0	2.6	8.8	2.6
PPs	224	189	35	31	4	0	15.6	13.8	1.8	0
L2 German with L1 Danish (478 clauses)										
Directional adverbs	250	237	13	8	5	0	5.2	3.2	2.0	0
Locative adverbs	18	12	6	1	5	0	33.3	5.6	27.8	0
Particles	19	5	14	2	10	2	73.7	10.5	52.6	10.5
PPs	308	259	49	43	6	0	15.9	14.0	1.9	0
L2 German with L1 Spanish (442 clauses)										
Directional adverbs	166	151	15	13	2	0	9.0	7.8	1.2	0
Locative adverbs	14	4	10	0	10	0	71.4	0	71.4	0
Particles	13	1	12	0	11	1	92.3	0	84.6	7.7
PPs	263	194	69	51	14	4	26.2	19.4	5.3	1.5

reorganized, for instance, broken down into several partial descriptions (73), possibly also involving some kind of semantic shift. The question arises whether this reflects avoidance or compensation strategies on the part of the L2 users:

(73) *Die Frau, die hinter der Tür steht, stellt sich jetzt neben die Tür* (L1DAN:written:C1/C2)
the.nom woman who.nom behind the.dat door stand.3sg stand.3sg.cause herself now next.to the.acc door

Up to this point, we have discussed certain types of challenges, as evidenced by L2 error patterns, based on qualitative data analyses. The following section draws on quantitative data in order to demonstrate that the above challenges 4 and 5—concerned with formal and functional differentiations between prepositions, verb particles, and locative and directional adverbs, which go beyond the typological perspective of S-framed event construal—actually constitute major, not only minor challenges for our advanced learners.

Formal and Functional Differentiation of Prepositions, Adverbs, and Particles as Advanced Learners' Major Challenge

Table 2 shows that L2 users of German, independently of having a V-framed (French, Spanish) or S-framed (English, Danish) L1 background, use three major types of path encoding devices, that is, adverbs, particles, and PPs, as well as diverse combinations resulting in paths consisting of two or more satellites/ground

elements.[13] **Table 2** shows that, across L1 groups, learners use different path encoding devices to a different extent and with diverging success.

As for directional adverbs, error proportions are similar across L1 groups, ranging from 3.3 to 9%; in other words, if learners use directional adverbs, they manage to use them correctly in the majority of the cases. However, given the same stimuli, L2 users with L1 Danish use more directional adverbs than L2 users of German with L1 Spanish, especially in combinations of prepositional phrases and directional adverbs. This might point to cross-linguistic influence from the L1 Danish, where these combinations are frequent.

Error proportions with prepositional phrases (excluding case marking errors) are somewhat higher for all L1 groups, ranging from 12.1 to 26.2%. The major part of these errors are semantic errors (see also *Challenge 3—Prepositional Phrase: Semantics and Context of Use*). Prepositional semantics still seem to be an issue for L2 German users with L1 Spanish in particular, in comparison to the other groups; this might be due to the fact that the Spanish prepositional system allows for fewer semantic distinctions than the other four languages (Liste Lamas, 2016a). Structural errors basically concern the use of prepositional

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[13]The analyses are based on oral data from both data sets (data set 1: cartoon retellings; data set 2: cartoon and picture book retellings). This makes the findings comparable in terms of modality (oral learner productions only) and overall number of utterances per L1 subset. For all combinations of linguistic means within one utterance/clause (e.g., *aus dem Haus raus* lit. 'out of the house out', *über die Hügel in den Abgrund* 'over the hills into the abyss'), correct and incorrect uses were separately counted for each linguistic category (e.g., 1 correct prepositional phrase and 1 correct particle in *aus dem Haus raus*).

TABLE 3 | "Category" error types in L2 German path encoding, i.e., incorrect uses of forms associated with a functionally inadequate category (data sets 1 and 2, cartoon and picture book retellings, oral data; columns "occ" indicate raw frequencies of occurrence, columns "%" indicate proportions).

	LOC ADV for DIR ADV		DIR ADV for LOC ADV		ADV for PART		PART for ADV		ADV for PREP		PREP for ADV		PART for PREP		PREP for PART	
	occ	%	occ	%	occ	%	occ	%	occ	%	occ	%	occ	%	occ	%
Category errors in L2 German with L1 English (n = 65)	17	26.2	2	3.1	1	1.5	26	40.0	7	10.8	9	13.8	1	1.5	2	3.1
Category errors in L2 German with L1 French (n = 35)	18	51.4	0	0	0	0	13	37.1	0	0	2	5.7	0	0	2	5.7
Category errors in L2 German with L1 Danish (n = 28)	5	17.9	3	10.7	1	3.6	12	42.9	1	3.6	6	21.4	0	0	0	0
Category errors in L2 German with L1 Spanish (n = 42)	9	21.4	1	2.4	0	0	12	28.6	2	4.8	18	42.9	0	0	0	0

phrases in translational unbounded motion events (e.g., examples 38–39), where directional adverbs would be expected (see also **Table 3**).

As for verb particles, error rates considerably differ between L1 groups (14% for L2 users with L1 French, 30.9% for L1 English, 73.7% for L1 Danish, and 92.3% for L1 Spanish). In general, these errors concern uses of verb particles in contexts where directional adverbs would be expected (see Section *Challenge 4— Verb Particles/Particle Verbs*). Differences between the two data sets may partly be due to differences in the stimulus sets: For instance, the cartoon stimuli presented to L2 users with L1 French and English included "familiar" contexts for frequent particle verbs such as *einsteigen* 'get in/on a vehicle', which the learners mastered rather well. By contrast, cartoon stimuli presented to L2 users with L1 Spanish and Danish only include very few scenes calling for particle verbs; there were no contexts for the more familiar, frequent particle verbs such as *einsteigen* 'get in/on a vehicle.'

Finally, error proportions are relatively high for locative adverbs, too, ranging from 33.3 to 73% (see Section *Challenge 5—Locative vs. Directional Adverbs*). As our analyses focus on motion event encoding, contexts for correct uses of locative adverbs in dynamic contexts are obviously rare (e.g., *er setzt sich oben auf einen Ast* 'it sits down on a branch at the top,' *er kommt unten raus* 'he comes out at the bottom'). But the substantial proportions of overuse, that is, of erroneous choices of locative adverbs used in inadequate contexts, show that L2 users struggle with distinguishing forms and functions of locative and directional adverbs (e.g., *drin* 'in' and *rein* 'in') as well as between locative adverbs and prepositions (e.g., example 43), see **Table 3**. For L2 users of German with L1 Danish this distinction seems to be less of an issue, compared to the other learner groups; this might be due to the fact that their L1 Danish, just like German, has different forms for static and dynamic adverbs. Further research would be needed with respect to the L2 users with L1 English, who seem to struggle with this distinction in German although their L1, too, distinguishes between locative and directional adverbs (e.g. *above* vs. *up*).

In sum, in spite of the stimuli varying considerably between the learner groups, a substantial part of inadequate path encodings by advanced L2 users of German points to learners' difficulties regarding the use of the "smaller" path encoding devices. **Table 3** presents more detailed analyses of these "category" errors, highlighting L2 users' difficulties with formally and functionally distinguishing between the different path encoding devices in their L2 German.

Table 3 thus quantifies more in detail L2 "category" error types in path encoding, that is, errors involving inadequate uses of forms associated with functionally inadequate categories (e.g., choosing a particle form where, functionally speaking, a directional adverb would be expected).[14] "Category" errors indicate lacking distinctions, on the part of the L2 users, between

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[14] Errors within path descriptions consisting of two or more satellites are broken down into the individual categories; case-marking errors are not taken into account here.

forms and functions of particles, local and directional adverbs, and prepositions.

In all learner groups, incorrect uses of particles instead of (directional) adverbs (e.g., *ein-* 'in' instead of *rein* 'in') account for a large part of the overall category errors (28.6–42.9%). This also applies to incorrect choices of locative adverbs instead of directional adverbs (e.g., *draußen* 'outside' for *raus* 'out'), accounting for 17.9 to 51.4% of all category errors, as well as incorrect uses of particles/prepositions instead of directional adverbs (e.g., *auf* 'on(to)' instead of *rauf* 'up'; 5.7–42.9%).

This finding strongly points to directional adverbs as the major stumbling block, with respect to path encoding, for advanced L2 users of German. In other words, L2 users of German display strong trends to underuse directional adverbs for path encoding in motion event descriptions, whereas they overuse locative adverbs, verb particles, and prepositions in contexts where directional adverbs would be expected. Pedagogically speaking, L2 users of German will thus probably benefit from a stronger teaching focus on directional adverbs (see Section *Methodological Implications and Implications for Teaching*).

The assumption that directional adverbs constitute a major challenge for L2 users of German is also supported by the high degree of intra-individual variability observed with respect to the use of locative and directional adverbs. Examples (74) to (77) show how correct directional and incorrect locative adverbs may be used by L2 users of German within little distance or even within the same utterance:

(74) *und er möchte* <u>darin</u> *schwimmen [...] ob man da* **<u>rein</u>* *schwimmen kann [...] weil er einfach <u>rein</u> springt* (L1ENG:oral:B2/C1)
and he want.3sg there-within to.swim [...] whether one there neutralized.form-in to.swim can.3sg [...] because he.nom only neutralized.form-in jump.3sg

(75) <u>hoch</u> *und wieder* **<u>unten</u>, *<u>oben</u>, *<u>unten</u>* (L1FRE:oral:C1)
up and again *at.the.bottom, *at.the.top, *at.the.bottom

(76) *und er geht* **<u>vorne</u> und <u>weiter</u>* (L1ENG:oral:B2)
and he.nom go.3sg in.front and ahead

(77) *er krabbelt dann wieder *<u>oben</u> in diesem Rohr [...] die Katze fällt dann <u>raus</u> [...] und rollt denn die Straße <u>runter</u>* (L1DAN:oral: C1)
he crawl.3sg then again at.the.top in this.dat pipe [...] the.nom cat fall.3sg then neutralized.form-out [...] and roll.3sg the street neutralized.form-down

This kind of non-systematic intra-individual variability indicates that L2 users struggle with formally and functionally distinguishing the different linguistic means and with establishing precise form-function mappings for each of them; we also find this kind of variability for (forms associated with the categories of) adverbs and particles (78–82), indicating that adverbs and particles are not systematically distinguished even by advanced L2 users of German:

(78) *und rollt den Huegel* **<u>auf</u> und dann den Hügel* <u>runter</u> (L1ENG:oral:C1/C2)
and roll.3sg the.acc hill up and then the.acc hill down

(79) *da wird der zauberne Frosch von seine Beutel* **<u>ausklettern</u> [...] und er ist von sein Loch schnell <u>raus</u> gekommen* (L1ENG:oral:C1/C2)
there will.3sg the.nom magic frog from his.fem.nom bag out-to.climb [...] and he.nom be.3sg from his.nom hole quickly neutralized.form-out come.pastpart

(80) *und er schaut ins Loch *<u>ein</u> [...] und er springt in das Auto* <u>hinein</u> (L1ENG:oral:B2/C1)
and he.nom look.3sg in-the.acc hole in [...] and he.nom jump.3sg into the.acc car away.from.origo-in

(81) *er geht* **<u>oben</u> und *<u>unten</u> [...] und dann geht er* <u>runter</u> *[...] und dann fängt der Mauer an* **<u>unterzugehen</u>* (L1ENG:oral:B2/C1)
he.nom go.3sg at.the.top and at.the.bottom [...] and then go.3sg he down [...] and then begin.3sg the.nom wall under-to.sink

(82) *und dank der Kraft ja* <u>hinauf</u> *gesprungen [...] und beide gehen *<u>unter</u>* (L1SPA:oral:B2)
and thanks.to the.dat force yeah away.from.origo-up jump.pastpart [...] and both go.3pl under

In sum, we have strong evidence that even advanced L2 users struggle with formally distinguishing and/or functionally differentiating between different types of German satellites (in the broader sense, including PPs). In the following section, we discuss the main findings with respect to our hypotheses (Section *Research Question and Hypotheses*) and to prior research. We also discuss possible explanations (Why do at least some advanced learners seem to fail to process and acquire even frequent German forms and patterns of path encoding, such as directional adverbs?) as well as implications for teaching.

DISCUSSION

Our data show that advanced L2 users of German display a large range of target-like and idiosyncratic linguistic means to verbalize path in motion event descriptions. They also show that idiosyncratic usage patterns may not be accounted for by typological differences alone, as they are observed across several or all L1 backgrounds. Importantly, at least for some L2 users, seemingly simpler directional adverb constructions seem to be more challenging than syntactically more complex PPs.

Hypotheses Revisited

In the *Results* section, we reported analyses of L2 usage and error patterns as related to a set of six major challenges. In addition to challenges 1–3, related to event construal and path encoding in PPs, challenges 4–6 stand out as central in our L2 data: In a nutshell, advanced L2 users primarily struggle with the "smaller" linguistic means of path encoding, that is, with differentiating between the forms of, for instance, verb particles, locative and directional adverbs (and with distinguishing them from prepositions) and with identifying and differentiating their functions, contexts of use, and combinatorial potential.

Hypothesis 1 is largely confirmed, as our advanced L2 users with V-framed L1s (Spanish, French) largely master the basic S-framed lexicalization pattern (Section *Challenge 1—Information*

Focus/Locus, Verb Semantics, and Verb Lexicon; see Stam, 2015; Goschler, 2019; Lewandowski, 2020a for similar observations of successful restructuring): They typically encode path in a satellite (or a combination of satellites), even if the encoding of manner in the main verb is not always successful, due, for instance, to lacking vocabulary for specific types of motion (e.g., crawling, sledding, doing a somersault). Incorrect uses of *gehen* 'to go' as a generic motion verb may be due to lexical transfer based on the English generic motion verb *to go* (see Madlener-Charpentier, 2022 for discussion).

We find very little evidence of inadequate V-framed patterns of path encoding, such as (manner and) path verb + *NP (e.g., *er springt die Schranke* 'he jumps the barrier') instead of (manner) verb + PP (e.g., er *springt über die Schranke* 'he jumps over the barrier'). This is in line, for instance, with Goschler (2019) and Scheirs (2015). As the options of encoding path in the verb root are quite restricted in German, which has a limited number of path verbs, the input evidence is pretty straightforward, and advanced L2 users will have experienced sufficient occurrences of manner encoded in the verb root and path encoded in satellites where they might have expected the reverse pattern to have been able to revise their initial L1-based hypotheses regarding information packaging (see Stefanowitsch, 2008 on negative entrenchment). However, S-framed types of encoding, e.g., particle verbs, may still 'hide' some residual underlying V-framed conceptualization and/or a lack of fine-grained pattern analysis, as discussed for *aussteigen* 'get off' in Section *Challenge 4—Verb Particles/Particle Verbs*.

Hypothesis 2 is confirmed, too, as at least some of the advanced users of L2 German in our sample still struggle with accusative/dative case-marking in PPs to some extent, primarily with two-way prepositions (Section *Challenge 2—Case Marking*; see also Scheirs, 2015). Advanced L2 users of German can be assumed to have explicitly learned that one-way prepositions such as *von* 'from' or *aus* 'out of' always call for dative marking of the embedded NP. We can also assume that they 'know' that two-way prepositions call for accusative marking in motion events in the narrow sense, that is, translational motion. In contrast, it has been suggested that 'traditional' teaching approaches, linking dative case with two-way prepositions to the question *wo?* 'where?' and accusative case to the question *wohin?* 'where to?' may hinder successful acquisition of the crucial distinction in L2 German (dative for localization and non-translational motion, accusative for translational motion). For instance, Scheller (2008) proposes an alternative teaching approach linking dative case with non-boundary-crossing situations (non-translational motion, e.g., *dancing on the street*) and accusative case with boundary-crossing situations (translational motion, e.g., *dancing onto the street*).

Our data show that, on all accounts, case marking, like verb order (cf. Diehl et al., 2000), is a 'vulnerable' area, despite extensive explicit teaching, and that it is not an all-or-nothing question for advanced learners. On the one hand, (accusative) case marking seems to be more challenging with some prepositions than others, e.g., *vor* 'in front of', *unter* 'under', *hinter* 'behind', and *auf* 'on'. This might be due, in part, to the fact that some prepositions are conceptually more complex

(and also acquired later in L1 acquisition, cf. Nachtigäller et al., 2013) and/or less frequent; it may also be the case that some prepositions have a stronger bias toward one case, such that preposition-article combinations like *hinter dem* 'behind the.dat.masc/neutr' or *unter dem* 'under the.dat.masc/neutr' will be more strongly entrenched (cf. Goschler and Stefanowitsch, 2010 for collostructional approaches in the spatial language domain). Occasional incorrect double markings such as *vom ihren* 'from-the.dat their.dat.pl' might also suggest that some of the frequent contracted forms are stored and used as chunks.

As for Hypothesis 3, we find that indeed, advanced learners' prepositional repertoires are semantically rather well differentiated. We still find evidence for some minor challenges regarding specific (pairs of) prepositions (Section *Challenge 3—Prepositional Phrase: Semantics and Context of Use*). For instance, in the case of *aus* 'out of' vs. *auf* 'on(to)', the phonological similarity might increase the difficulty of making the necessary formal and functional distinctions (this might also apply to the corresponding verb particles *aus-* 'out' vs. *auf-* 'on' and the directional adverbs *raus* 'out' vs. *rauf* 'up'). In contrast, the functions and contexts of use of *von* 'from' and *aus* 'out of' might be particularly hard to distinguish for L2 users of German with L1 Spanish and L1 French, whose L1s have a highly frequent, polysemous preposition *de* 'of, from, out of' that covers, among other things, usage contexts of German *von* 'from' as well as *aus* 'out of.' For less frequent spatial relations, learners may simply lack a precise adposition such as *entlang* 'along' and therefore fall back on a neighboring, more frequent preposition such as *neben* 'beside' (e.g., *er läuft neben den Fluss* 'he walks next to the river' instead of *er läuft den Fluss entlang* 'he walks along the river'), possibly even knowing that their choice is not entirely correct, but that it constitutes the best solution they can offer under the given circumstances (cf. Ortega, 2009, p. 33). Alternatively or additionally, the learners' L1 may also play a role, either at the level of event construal (Spanish *al lado de* 'next to' may be used for translational and non-translational motion events, which might reduce L1 speakers' selective attention for event construal in specific cases) or the lexical level (the fact that *al lado de* frequently translates as German *neben* 'beside' may encourage L2 users to overuse *neben* as an equivalent of *al lado de* in contexts where German has a more specific preposition).

Hypothesis 4 relates to our central claim that advanced users of L2 German will still struggle with the "smaller" linguistic path encoding devices, particularly with the formal and functional distinction between prepositions, particles, locative and directional adverbs, although these are frequent in German. The hypothesis is confirmed: Sections *Challenge 3, Challenge 4* and *Challenge 5* show that even advanced L2 users do not systematically distinguish between prepositions and verb particles, prepositions and adverbs, particles and adverbs, locative and directional adverbs (in line with findings by Liste Lamas, 2015a, 2016b; Scheirs, 2015). It is apparently not sufficiently clear to the L2 users what exactly counts as a preposition in German (Section *Challenge 3—Prepositional Phrase: Semantics and Context of Use*), what exactly verb particles, locative and directional adverbs are and how they are used. L2 users overuse forms from the German prepositional repertoire

in contexts where, functionally speaking, particles or adverbs would be expected – and vice versa. L2 users also seem to mix up verb particles and adverbs (Section *Challenge 4—Verb Particles/Particle Verbs*) as well as directional and locative adverbs (Section *Challenge 5—Locative vs. Directional Adverbs*).[15]

Our section *Formal and Functional Differentiation of Prepositions, Adverbs, and Particles as Advanced Learners' Major Challenge* illustrated L2 users' uncertainties and their partial inability to differentiate between specific path encoding devices, their functions, and usage restrictions with a particular focus on intra-individual variation. We argued that making these distinctions is not a minor, but rather a major challenge for all learners, independently of their L1's basic lexicalization patterns. For instance, L2 users of German with English as a first language, whose L1 also has particles, whose function, however, covers that of both German verb particles and directional adverbs, seem to be about as challenged by the German particle and adverb constructions as L2 users of German with French as a first language, whose L1 does not have verb particles and only has a very small number of locative/directional adverbs that are used infrequently and in a limited number of contexts (e.g., *sortir dehors* 'exit outside'). In the case of particles and adverbs, splitting up an existing category (L1 English) seems to be similarly challenging as acquiring a new category (or several new categories) or broadening a category (L1 French, L1 Spanish).

Formal and/or functional distinctions may be particularly difficult to make in cases where the linguistic means are phonetically similar. For instance, for the semantic relation IN the separable verb particle is *ein* 'in', the directional adverb *rein* 'into', the locative adverb *drin(nen)* 'inside', and the preposition *in* 'in(to).' Similarly, for the UNDER-relation the forms are *unter* 'under' (particle, preposition), *runter* 'down' (directional adverb), and *unten* 'below' (locative adverb); for the OUT-relation, the forms are *aus* 'out' (particle, preposition), *raus* 'out' (directional adverb), and *draußen* 'outside' (locative adverb); some of the latter additionally are similar to forms used for the UP-relation, namely *auf* 'up' (particle, preposition), *rauf* 'up' (directional adverb; also: *hoch*), and *drauf* 'on top, above' (but also: *oben*); however, L2 users also struggle with functional distinctions when forms are not phonetically similar (e.g., locative adverb *oben* 'at the top' vs. directional adverb *hoch/rauf* 'up').

The distinctions may also be blurred, to a certain extent, by a lack of transparency and consistency with respect to the form-meaning mappings and/or input distributions; for instance, some of the *d*-forms are ambiguous (e.g., *drauf* 'up/above', which might be used as both directional and locative adverb, cf. examples 16, 21 above); others are not, e.g., *draußen* 'outside'/*'out.' Also, some of the *d*-forms only have specific, metaphorical uses such as *drein* in *traurig dreinschauen* 'to look sad' (but not *drein springen* 'jump there-in') or *draus* in *da wird nichts draus* 'this

will come to nothing' (but not *draus springen* 'jump there-out'). Also, not all the linguistic categories have the same combinatorial potential (Sections *Challenge 4—Verb Particles/Particle Verbs, Challenge 5—Locative vs. Directional Adverbs,* and the discussion of Hypothesis 5 below). Finally, particles and adverbs may be difficult to process for L2 users of German as they typically occur at the end of utterances; "the right edge of the utterance" has been assumed to be particularly salient and relevant in L1 acquisition (e.g., Freudenthal et al., 2010), but it may be particularly taxing for (adult) L2 users if they are not used to crucial information being postponed until the end of sentences.

In sum, L2 users of German possibly need help with identifying the formal repertoires of the individual categories as well as their specific functions and contexts of use. This involves, first, knowing that the different categories of linguistic devices for the encoding of paths exist (e.g., that verb particles and directional adverbs are formally and functionally distinct categories in German as opposed, for instance, to English and Danish); second, knowing which forms belong to which categories; third, how the (members of the) different categories are used (e.g., which contexts call for prepositions, particles, or adverbs?) and when they may not be used (e.g., in general, no PPs for incremental motion[16]); fourth, in which contexts novel uses are permitted or not (e.g., *einsteigen* 'get on (a train etc.)' but *einklettern* 'climb in').

Finally, Hypothesis 5 is also confirmed. The data presented in Sections *Challenge 3—Prepositional Phrase: Semantics and Context of Use* to *Challenge 6—Expression of Conceptually Complex Spatial Relations* show that indeed, advanced users of L2 German struggle with the identification of the precise combinatorial potential and combinatorial restrictions of PPs, particles, and adverbs, also as a function of event type. This reflects the findings described with respect to the individual categories; this concerns, for example, the distinction between the pattern NP + directional adverb for translational unbounded motion (e.g., *die Treppe hinauf rennen* 'run up the stairs' but [#]*auf die Treppe rennen* 'run onto the stairs') vs. PP (+ optional directional adverb) for translational motion (e.g., *ins Haus (rein) rennen* 'run into the house' but *das Haus (rein) rennen* 'run the house in'); or the distinction between the pattern PP + particle (e.g., *aus dem Auto aussteigen* 'get out of the car') as opposed to PP + directional adverb (e.g., *aus dem Auto raus steigen* 'step out of the car', but *einklettern/rein klettern* 'climb in'). In other words, L2 users need to learn in which contexts which types of devices may, must, or may not be combined.

The challenge of mastering the combinatorial potential and restrictions of specific linguistic devices is possibly increased in the case of conceptually complex spatial relations (Section *Challenge 6—Expression of Conceptually Complex Spatial Relations*) and by the fact that German, in general, displays a high degree of information density with frequent occurrences of complex path descriptions with two or more path satellites. L2 users actually exhibit a range of strategies

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[15]Incorrect uses of directional adverbs in motion event contexts where particles would be expected are not attested in our data. This is most probably due to the make-up of the stimuli and does not mean that this error type does not occur in general; attested occurrences such as *aber von dem Gewicht irgendwie wieder [#]rein geholt oder [#]eingeholt worden* 'but from the.dat weight somehow brought back in or closed in on' (L1 Danish) show that some learners may be aware of the formal differences, but not know how to use the different forms/categories.

[16]With few exceptions, for instance, the circumposition *auf … zu* 'towards' (e.g., *er rannte auf das Haus zu* 'he was running towards the house'), as observed by one of the reviewers.

in order to verbalize complex paths; this includes options for avoiding information-dense utterances, e.g., by distributing path information over consecutive utterances as well as target-like, information-dense options (Section *Challenge 6—Expression of Conceptually Complex Spatial Relations*).

Taken together, these findings confirm that L2 users' challenges regarding the encoding of motion events and in particular path encoding in German go way beyond typological aspects of event construal and the acquisition of the basic S-framed lexicalization/conceptualization pattern of German. In other words, whether they need to restructure the basic routines of information packaging (V-framed to S-framed) or not, all L2 users need to acquire the specific linguistic means (forms, categories) used to encode specific motion events as well as their contexts of use and combinatorial potential.

Methodological Implications and Implications for Teaching

As already discussed in Section *Materials and Methods*, our analyses are subject to methodological limitations, due to the differences between the two data sets we combined for analysis for the purposes of this paper. Data were elicited with the help of two different stimulus sets, with different stimulus types (video clips, cartoons, picture books), resulting in different data types (e.g., written, oral) and diverging corpus sizes (see Section *Materials and Methods*). Thus, any quantitative analyses and comparisons across the data sets and subsets are necessarily limited, although data subsets are directly comparable, in terms of size and elicitation methods, with respect to L1 effects (Danish vs. Spanish, English vs. French). We have tried to address these issues, for instance, by referring to error proportions instead of raw numbers, and by restricting parts of the analyses to data subsets (e.g., written vs. oral data). However, as argued above, we do not aim at showing precise intergroup differences, but our findings rather suggest similarities, in terms of usage and error patterns, across groups, data sets, and subsets, independently of and in spite of the differences (stimuli, L1s, …), in particular with respect to the underuse of directional adverbs. This indicates that our findings will possibly generalize rather well beyond the data discussed here and allow for meaningful implications for the generally heterogeneous second language classroom. Further analyses based on larger, and possible more strictly controlled data sets might confirm or qualify individual aspects of our findings.

We collected data from L2 users at different advanced proficiency levels (B2 to C2, as documented by self-evaluations and/or tests), all L2 users being intermediate advanced or advanced learners and in regular contact with German. Within this advanced learner population, we still find substantial inter-individual and intra-individual variation. Inter-individual variation concerns usage patterns and error proportions: Individual L2 users display different preferences for specific linguistic devices, but also for (proportions) of combinations of these devices (and levels of information density, not analyzed here), as well as different rates of errors with different linguistic devices. At the same time, one and the same person may be

alternating, in seemingly non-systematic ways, between correct and incorrect uses of specific path encoding devices across stimuli or spatial relations, across or within tasks. In some contexts, learners may actually fail to retrieve correct forms because form-meaning mappings or processing routines are not sufficiently entrenched. Errors may also be due to lacking attention, on the part of a learner, for possibly non-essential aspects of 'form' in motion event descriptions within complex retelling tasks, where learners' attention is likely to be focused on 'content', that is, on the storyline. Inter- and intra-individual variation may additionally be due to learners' individual engagement with the tasks and their willingness to take risks, for instance, to try out different linguistic devices for path encoding across stimuli and spatial relations, to produce information-dense, complex descriptions of motion events and spatial relations, and in doing so, to go beyond the limits of their current competences.

Methodologically speaking, our findings regarding intra-individual variation in motion event encoding (Section *Formal and Functional Differentiation of Prepositions, Adverbs, and Particles as Advanced Learners' Major Challenge*) suggest that stimulus sets used for the elicitation of motion event descriptions should not only display systematic variation, but also systematic repetition in order to allow for the collection of data that adequately reflect both (L1 and L2) users' linguistic repertoires for the encoding of motion events, especially paths, and their flexibility and consistency when using this repertoire in specific contexts. Additionally, further research should, whenever possible, report combined analyses of group data and individual variation, as variation is a basic characteristic of interlanguages (Dimroth, 2019).

Pedagogically speaking, our data suggest that the teaching of spatial language constructions in L2 German might need revisiting. Prepositions, especially two-way prepositions, usually receive much attention in teaching and teaching materials; this traditional teaching focus on PPs—their form, function, semantics, and case-marking—is by all means necessary, but not sufficient—and it might even overshadow other challenging aspects of spatial language. Particle verbs, for instance, are typically intensely addressed from a morphosyntactic perspective; this is certainly necessary, too, but again not sufficient, as L2 users can also be shown to struggle with verb particle semantics. Directional adverbs are often not dealt with in teaching (materials) (Liste Lamas, 2015b, pp. 42–43), and if some learner grammars do provide exercises on prepositions, locative and directional adverbs, the complex relationship between the different categories is barely discussed. This concerns formal and functional distinctions between prepositions, adverbs, and particles, including the differentiation between locative and directional adverbs; the use of special forms such as 'double' adverbs (e.g., *hinauf* 'away.from.origo-up'); the interpretation of ambiguous forms (e.g., locative and directional *drauf* 'there-(up)on'); and the combinatorial potential and restrictions of either category as well as the semantic contribution of particles and adverbs in combinations with PPs.

Adding a TfS perspective on event construal, lexicalization patterns, and manner salience (cf. De Knop and Gallez, 2013) is certainly beneficial for the learners, given that even some

advanced learners still struggle with some of these aspects (cf. uses of *gehen* 'to go' as generic verb, uses of German manner verbs as manner-and-path verbs in transitive constructions); again, this is not sufficient for all L2 users to acquire detailed, target-like, and variable options, particularly of path encoding. Given the large range of path encoding devices and patterns in German, the full array of these linguistic means needs to be addressed – and not only for the most advanced learners, but rather early in acquisition.

This is because crucial aspects of path encoding reflect more general properties of German that will primarily help L2 users of German with V-framed L1s to grasp basic regularities of S-framed German: Across event types and constructions, German encodes in adverbs (satellites) crucial information that would be encoded in verb roots in V-languages. We therefore suggest that L2 users of German with V-framed L1s will benefit from being offered (directional) adverbial equivalents to path verbs in addition to PP equivalents early on.

Teachers, whether L1 or L2 users of German, will benefit from consciousness raising with respect to learners' challenges beyond PPs and basic event construal; they might be encouraged to introduce exemplars of central categories and patterns early, for instance, directional adverbs and combinations of PPs and directional adverbs. In addition to rich, structured exposure to meaningful exemplars of the target patterns (Madlener, 2015), L2 users might also benefit from explicit instruction in the domain of motion event and path encoding beyond forms and semantics of PPs and case-marking: Directional adverbs exist. Sometimes they look like locative adverbs, but in general they have specific forms (e.g., *rauf* 'up', *runter* 'down', *rein* 'in', *raus* 'out'). Forms may vary across contexts (e.g., *drauf, rauf, herauf, hinauf*). Sometimes directional adverbs resemble verb particles (e.g., *rein—ein, runter—unter*) or prepositions (e.g., *runter—unter, rauf—auf*), but they have distinct functions and contexts of usage. They often occur in combination with PPs— sometimes they seem redundant (e.g., *ins Haus rein* 'into the house in') and sometimes they are complementary [e.g., *unter der Brücke (hin)durch*, lit. 'under the bridge through']—in any case, they make a semantic contribution to the meaning of the whole construction.

Some L2 productions, hesitations, and self-corrections, as well as learners' questions may indicate that the L2 users are aware of missing out on or lacking sufficient understanding of some aspects of the system. Error patterns and learners' questions may give insight into current learner hypotheses and possible next steps. Liste Lamas (2016b) shows that teaching combinatorial patterns of PPs and directional adverbs, specifically when learners are aware of current competence gaps, may trigger acquisitional processes, even if temporarily, overgeneralizations may occur.

DATA AVAILABILITY STATEMENT

The datasets presented in this article are not readily available because the data are part of a PhD and habilitation project. Requests to access the datasets should be directed to madl@zhaw.ch.

AUTHOR CONTRIBUTIONS

Both authors listed have made a substantial, direct, and intellectual contribution to the work and approved it for publication.

REFERENCES

Alferink, I. (2015). Dimensions of Convergence in Bilingual Speech and Gesture. *Utrecht: LOT.*

Alonso, R. (2016). Cross-linguistic influence in the interpretation of boundary-crossing events in L2 acquisition. *Rev. Cogn. Linguist.* 14, 161–182. doi: 10.1075/rcl.14.1.07alo

Althoff, R. (2019). "Typische Sprachstrukturen im DaF-Unterricht: Adverbien, trennbare Verbpartikeln und Richtungsadverbien," in *Germanistik im Umbruch - Linguistik, Übersetzung und DaF,* eds I. Doval and E. Liste Lamas (Berlin: Frank and Timme), 151–160.

Aske, J. (1989). "Path predicates in English and Spanish: a closer look," in *Proceedings of the Fifteenth Annual Meeting of the Berkeley Linguistics Society (Berkeley),* 1–14.

Bauer, L. (2012). Transfer von L1-Strukturen in Beschreibungen von Bewegungsereignissen bei japanischen DaF-Lernern. *Info DaF* 39, 17–30. doi: 10.1515/infodaf-2012-0103

Beavers, J., Levin, B., and Tham, S. (2010). The typology of motion expressions revisited. *J. Linguist.* 46, 331–377. doi: 10.1017/S0022226709990272

Berthele, R. (2006). *Ort und Weg: Die sprachliche Raumreferenz in Varietäten des Deutschen, Rätoromanischen und Französischen.* Berlin; Boston: De Gruyter. doi: 10.1515/9783110890464

Berthele, R., and Stocker, L. (2016). The effect of language mode on motion event descriptions in German-French bilinguals. *Lang. Cogn.* 9, 1–29. doi: 10.1017/langcog.2016.34

Bowerman, M., and Choi, S. (2001). "Shaping meanings for language: Universal and language-specific in the acquisition of spatial semantic categories," in *Language Acquisition and Conceptual Development,* ed M. Bowerman and S. C. Levinson (Cambridge: Cambridge University Press), 475-511. doi: 10.1017/CBO9780511620669.018

Bryant, D. (2012). *Lokalisierungsausdrücke im Erst- und Zweitspracherwerb. Typologische, ontogenetische und kognitionspsychologische Überlegungen zur Sprachförderung in DaZ.* Baltmannsweiler: Schneider Verlag Hohengehren.

Bylund, E., and Athanasopoulos, P. (2015). Introduction: cognition, motion events, and SLA. *Modern Lang. J.* 99 (Supplement), 1–13. doi: 10.1111/j.1540-4781.2015.12175.x

Cadierno, T. (2008). "Learning to talk about motion in a foreign language," in *Handbook of Cognitive Linguistics and Second Language Acquisition*, eds P. Robinson and N. C. Ellis (New York/London: Routledge), 239–275.

Cadierno, T. (2012). Thinking for Speaking in second language acquisition, in The Encyclopedia of Applied Linguistics, ed C. A. Chapelle (Malden: Blackwell Publishing).

Cadierno. T. (2004). "Expressing motion events in a second language: a cognitive typological perspective," in *Cognitive Linguistics, Second Language Acquisition, and Foreign Language Teaching*, eds M. Achard and S. Niemeier (Berlin/New York: Mouton de Gruyter), 13–49.

Cavandoli, O. (2003). *La Linea*. Monitorpop Entertainment.

Daller, M., Treffers-Daller, J., and Furman, R. (2011). Transfer of conceptualization patterns in bilinguals: The construal of motion events in Turkish and German. *Bilingual. Lang. Cogn.* 14, 95-119. doi: 10.1017/S1366728910000106

De Knop, S., and Dirven, R. (2008). "Motion and location events in German, French and English: A typological, contrastive and pedagogical approach," in *Cognitive Approaches to Pedagogical Grammar. A Volume in Honour of René Dirven*, eds S. De Knop and T. De Rycker (Berlin: Mouton de Gruyter), 295-324.

De Knop, S., and Gallez, F. (2013). "Manner of motion: A privileged dimension of German expressions," in *Compendium of Cognitive Linguistics Research,* ed T. Li (Hauppage, NY: Nova Science Publishers*)*, 25-42.

Diehl, E., Christen, H., Leuenberger, S., Pelvat, I., and Studer, T. (2000). *Grammatikunterricht: Alles für der Katz? Untersuchungen zum Zweitsprachenerwerb Deutsch*. Tübingen: Niemeyer.

Dimroth, C. (2019). "Lernersprachen," in *Sprachdiagnostik Deutsch als Zweitsprache. Ein Handbuch*, eds S. Jeuk and J. Settinieri (Berlin/Boston: De Gruyter Mouton), 21–46.

Ellis, N. C. (2006). Selective attention and transfer phenomena in L2 acquisition: contingency, cue competition, salience, interference, overshadowing, blocking, and perceptual learning. *Appl. Ling.* 27, 164–194. doi: 10.1093/applin/aml015

Ellis, N. C. (2007). "The weak-interface, consciousness, and form-focussed instruction: mind the doors," in *Form Focused Instruction and Teacher Education: Studies in Honour of Rod Ellis*, eds S. Fotos and H. Nassaji (Oxford: Oxford University Press), 17–33.

Eskildsen, S. W., Cadierno, T., and Li, P. (2015). "On the development of motion constructions in four learners of L2 English," in *Usage-based Perspectives on Second Language Learning,* eds T. Cadierno and S. W. Eskildsen (Berlin: Mouton de Gruyter), 207–232. doi: 10.1515/9783110378528-011

Fagard, B. (2019). "From il s'envole hors to il sort du nid: A typological change in French motion expressions," in *The Semantics of Dynamic Space in French. Descriptive, Experimental and Formal Studies on Motion Expression,* eds M. Aurnague and D. Stosic (Amsterdam: John Benjamins), 110–138.

Filipović, L., and Ibarretxe-Antuñano, I. (2019). "Motion," in *Cognitive Linguistics - Key Topics*, eds E. Dabrowska and D. Divjak (Berlin/Boston: De Gruyter Mouton), 87–108. doi: 10.1515/9783110626438-005

Freleng, F. (1950). *Canary Row. Animated Cartoon*. Time Warner: New York.

Freudenthal, D., Pine, J., and Gobet, F. (2010). Explaining quantitative variation in the rate of Optional Infinitive errors across languages: a comparison of MOSAIC and the Vatiational Learning Model. *J. Child Lang.* 37, 643–669. doi: 10.1017/S0305000909990523

Goschler, J. (2019). "Transfer in die L2 bei der Kodierung räumlicher Bewegung. Eine empirische Untersuchung von DaZ-Sprecher/innen mit Russisch, Polnisch und Türkisch als L1," in *Raumrelationen im Deutschen: Kontrast, Erwerb und Übersetzung*, eds B. Lübke and E. Liste Lamas (Tübingen: Stauffenburg), 91–109.

Goschler, J., and Stefanowitsch, A. (2010). "Pfad und Bewegung im gesprochenen Deutsch: Ein kollostruktionaler Ansatz," in Linguistik im Nordwesten, eds T. Stolz, E. Ruigendijk and J. Trabant (Bochum: Brockmeyer), 103–115.

Gullberg, M. (2009). Reconstructing verb meaning in a second language. How English speakers of L2 Dutch talk and gesture about placement. *Annu. Rev. Cogn. Ling.* 7, 221–244. doi: 10.1075/arcl.7.09gul

Harnisch, K. R. (1982). "Doppelpartikelverben als Gegenstand der Wortbildungslehre und Richtungsadverbien als Präpositionen. Ein syntaktischer Versuch," in *Tendenzen verbaler Wortbildung in der Deutschen Gegenwartssprache*, ed. L. M. Eichinger (Hamburg: Helmut Buske), 107–133.

Harr, A.-K. (2012). *Language-Specific Factors in First Language Acquisition. The Expression of Motion Events in French and German.* Berlin/Boston: De Gruyter Mouton.

Harr, A.-K., and Hickmann, M. (2016). "Static and dynamic location in French and German child language," in *The Acquisition of French in Multilingual Contexts,* eds P. Guijarro-Fuentes, K. Schmitz, and N. Müller (Bristol: Multilingual Matters), 118–144. doi: 10.21832/9781783094530-008

Haughton, C. (2014). *Shh! We Have a Plan*. London: Walker.

Hendriks, H., and Hickmann, M. (2015). Finding one's path into another language: On the expression of boundary crossing by English learners of French. *Modern Lang. J.* 99(Supplement), 14–31. doi: 10.1111/j.1540-4781.2015.12176.x

Heyvaert, P. (2018). Het gebruik van de Nederlandse plaatsingswerkwoorden 'zetten' en 'leggen' diir Franstalige leerders van het Nederlands. *Dutch J. Appl. Ling.* 7, 45–67. doi: 10.1075/dujal.17004.hey

Hijazo-Gascón, A. (2018). Acquisition of motion events in L2 Spanish by German, French and Italian speakers. *Lang. Learn. J.* 46, 241–262. doi: 10.1080/09571736.2015.1046085

Hijazo-Gascón, A. (2020). *Moving Across Languages. Motion Events in Spanish as a Second Language.* Berlin/Boston: de Gruyter.

Inagaki, S. (2001). Motion verbs with goal PPs in the L2 acquisition of English and Japanese. *Stud. Second Lang. Acquisit.* 23, 153–170. doi: 10.1017/S0272263101002029

Ji, Y., Hendriks, H., and Hickmann, M. (2011). How children express caused motion events in Chinese and English: Universal and language-specific influences. *Lingua* 121, 1796–1819. doi: 10.1016/j.lingua.2011.07.001

Ji, Y., and Hohenstein, J. (2018). English and Chinese children's motion event similarity judgements. *Cogn. Ling.* 29 (1), 45-76. doi: 10.1515/cog-2016-0151

Krause, M. (1994a). "Bemerkungen zu KOMM- + Partizip II im heutigen Deutsch," in *Partizip und Partizipialgruppen im Deutschen,* eds D. Bresson and M. Dalmas (Tübingen: Narr), 163–180.

Krause, M. (1994b). *Eléments pour une grammaire des prépositions, substituts et particules verbales de l'allemand. AB, AN, IN/EIN, ÜBER, UM, UNTER, VOR.* Stuttgart: Hans-Dieter Heinz.

Krause, M. (1998a). *Eléments pour une grammaire des prépositions, substituts et particules verbales de l'allemand. AUF, DURCH, NACH, ZU.* Stuttgart: Hans-Dieter Heinz.

Krause, M. (1998b). "Überlegungen zu HIN/HER + Präp," in *Particulae particularum. Festschrift für Harald Weydt*, eds T. Harden and E. Hentschel (Tübingen: Stauffenburg), 195–217.

Lewandowski, W. (2020a). Bilingual patterns of path encoding: a study of Polish L1-German L2 and Polish L1-Spranish L2 speakers. *Int. Rev. Appl. Ling. Lang. Teach.* 2020, 127. doi: 10.1515/iral-2019-0127

Lewandowski, W. (2020b). Variable motion event encoding within languages and language types: a usage-based perspective. *Lang. Cogn.* 13, 1–32. doi: 10.1017/langcog.2020.25

Liste Lamas (in preparation). *Wegkodierung im DaF bei spanischen und dänischen Lernenden* (working title). PhD thesis, Universidade de Santiago de Compostela/Université de Fribourg.

Liste Lamas, E. (2015a). "The German Directional Adverbs with hin- and her-: a preliminary study on their acquisition by L1 speakers of Spanish," in *New Horizons in the Study of Motion: Bringing Together Applied and Theoretical Perspectives*, eds I. Ibarretxe-Antuñano and A. Hijazo-Gascón (Newcastle-upon-Tyne: Cambridge Scholars Publishing), 7–28.

Liste Lamas, E. (2015b). Der Erwerb räumlicher Relationen im Deutschen durch Lerner mit Spanisch als L1: der Fall von hin- und her-, eds B. Handwerker, R. Bäuerle, I. Doval and B. Lübke, Zwischenräume: Lexikon und Grammatik im Deutschen als Fremdsprache (Baltmannsweiler: Schneider Verlag Hohengehren), 77–93.

Liste Lamas, E. (2016a). "Über einige Merkmale der Wegkodierung im Deutschen als Fremdsprache bei Lernern mit Spanisch als L1," in *Sprachdidaktik Spanisch-Deutsch. Forschungen an der Schnittstelle von Linguistik und Fremdsprachendidaktik*, eds F. Robles i Sabater, D. Reimann, R. Sánchez Prieto (Tübingen: Narr), 47–65.

Liste Lamas, E. (2016b). "Path encoding in German as a foreign language: difficulties encountered by L1 Spanish learners," in *Yearbook of the German Cognitive Linguistics Association*, ed. J. Goschler and S. Niemeier (Berlin/New York: De Gruyter), 47–65. doi: 10.1515/gcla-2016-0006

Madlener, K. (2015). *Frequency Effects in Instructed Second Language Acquisition*. Berlin/Boston: De Gruyter Mouton.

Madlener, K., Skoruppa, K., and Behrens, B. (2017). Gradual development of constructional complexity in German spatial language. *Cogn. Ling.* 28, 757–798. doi: 10.1515/cog-2016-0089

Madlener-Charpentier, K. (2022). "Learned attention beyond typological bootstrapping: Constructional repertoires and constructional complexity in the spatial language domain," in *Directions for Pedagogical Construction Grammar: Learning and teaching (with) Construction*, ed H. C. Boas (Berlin/Boston: De Gruyter Mouton), 217–261.

Mayer, M. (1969). *Frog, Where Are You?* New York, NY: Dial.

Montero-Melis, G., Bylund, E. (2017). Getting the ball rolling: the cross-linguistic conceptualization of caused motion. *Lang. Cogn.* 9, 446–472. doi: 10.1017/langcog.2016.22

Nachtigäller, K., Rohlfing, K. J., and McGregor, K. K. (2013). A story about a word: does narrative presentation promote learning of a spatial preposition in German two-year-olds? *J. Child Lang.* 40, 900–917. doi: 10.1017/S0305000912000311

Ochsenbauer, A.-K., and Engemann, H. (2011). The impact of typological factors in monolingual and bilingual first language acquisition. Caused motion expressions in English and French. *Lang. Interact. Acquisit.* 2, 101–128. doi: 10.1075/lia.2.1.05och

Ochsenbauer, A.-K., and Hickmann, M. (2010). Children's verbalization of motion events in German. *Cogn. Ling.* 21, 217–238. doi: 10.1515/COGL.2010.008

Ortega, L. (2009). *Understanding Second Language Acquisition*. London: Hodder Education.

Özçalişcan, S. (2015). Ways of crossing a spatial boundary in typologically distinct languages. *Appl. Psycholing.* 36, 485–508. doi: 10.1017/S0142716413000325

Pavlenko, A., and Volynsky, M. (2015). Motion encoding in Russian and English: moving beyond Talmy's typology. *Modern Lang. J.* 99(Supplement), 32–48. doi: 10.1111/modl.12177

Robinson, P., and Ellis, N. C. (2008). "Conclusion: cognitive linguistics, second language acquisition and L2 Instruction—issues for research," in *Handbook of Cognitive Linguistics and Second Language Acquisition*, eds P. Robinson and N.C. Ellis (London: Routledge), 489–545.

Scheirs, V. (2015). *Morpho-Syntax von deutschen und französischen Bewegungsausdrücken im Fremdspracherwerb des Deutschen bei französischsprachigen Lernern*. Dissertation. Louvain-la-Neuve: Université Catholique de Louvain.

Scheller, J. (2008). *Animationen in der Grammatikvermittlung. Multimedialer Spracherwerb am Beispiel von Wechselpräpositionen*. Berlin: Lit.

Slobin, D. I. (1996). From "thought and language" to "thinking for speaking", in *Rethinking Linguistic Relativity*, eds J. J. Gumperz and S. Levinson (Cambridge: Cambridge University Press), 70–96.

Slobin, D. I. (2003). "Language and thought online: Cognitive consequences of linguistic relativity," in *Language in Mind. Advances in the Study of Language and Thought*, eds D. Gentner and S. Goldin-Meadow (Cambridge, MA: MIT Press), 157–191.

Slobin, D. I. (2004). "The many ways to search for a frog. Linguistic typology and the expression of motion events," in *Relating Events in Narrative Volume 2: Typological and Contextual Perspectives,* eds S. Strömqvist and L. Verhoeven (Mahwah: Lawrence Erlbaum), 219–257.

Stam, G. (2015). Changes in thinking for speaking. a longitudinal case study. *Modern Lang. J.* 99(Supplement), 83–99. doi: 10.1111/j.1540-4781.2015.12180.x

Stefanowitsch, A. (2008). Negative entrenchment: a usage-based approach to negative evidence. *Cogn. Ling.* 19, 513–531. doi: 10.1515/COGL. 2008.020

Talmy, L. (1985). "Lexicalization patterns. Semantic structure in lexical forms," in *Language Typology and Syntactic Description: Grammatical Categories and the Lexicon*, ed T. Shopen (Cambridge: Cambridge University Press), 57–149.

Talmy, L. (2000). *Toward a Cognitive Semantics*. Cambridge: MIT Press.

Treffers-Daller, J., and Tidball, F. (2016). "Can L2 learners learn new ways to conceptualize events? A new approach to restructuring in motion event construal," in *The Acquisition of French in Multilingual Contexts,* ed P. Guijarro-Fuentes, K. Schmitz and N. Müller (Bristol: Multilingual Matters), 145–184.

Woerfel, T. J. N. (2018). *Encoding Motion Events. The Impact of Language-Specific Patterns and Language Dominance in Bilingual Children*. Boston/Berlin: de Gruyter.

Zlatev, J., Blomberg, J., Devylder, S., Naidu, V., and van de Weijer, J. (2021). Motion event descriptions in Swedish, French, Thai and Telugu: a study in post-Talmian motion event typology. *Acta Ling. Hafniensia* 3, 58–90. doi: 10.1080/03740463.2020.1865692

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